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Interventions to treat post-traumatic disorder (PTSD) in vulnerably housed populations and trauma-informed care: A scoping review

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Title: Interventions to treat post-traumatic disorder (PTSD) in vulnerably housed populations and trauma-informed care: A scoping review

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Abstract

Objectives The goals of this study are to identify and analyse interventions that aim to treat Post Traumatic Stress Disorder (PTSD) and complex PTSD in individuals who are vulnerably housed and to describe how these treatments have been delivered using trauma-informed care.

Design Scoping review

Search strategy We searched electronic databases including MEDLINE, Embase, PsycINFO, CINAHL, the Cochrane Library, Web of Science, and PTSDpubs for published literature up to March 2020 for any studies that examined the treatment of PTSD in adults who were vulnerably housed. Websites of relevant organizations and other grey literature sources were searched to supplement the electronic database search. The characteristics and effect of the interventions were analyzed. We also explored how the interventions were delivered and the elements of trauma-informed care that were described.

Results 26 studies were included. We identified four types of interventions: (1) trauma focused psychotherapies; (2) non-trauma psychotherapies; (3) housing interventions; and (4) pharmacotherapies. The trauma-informed interventions were small case series and the non-trauma focused therapies included four randomized controlled trials, were generally ineffective. Of the ten studies which described trauma-informed care the most commonly named elements were physical and emotional safety, the experience of feeling heard and understood, and flexibility of choice. The literature also commented on the difficulty of providing care to this population including lack of private space to deliver therapy; the co-occurrence of substance use; and barriers to follow-up including limited length of stay in different shelters and high staff turnover.

Conclusions This scoping review identified a lack of high-quality trials to address PTSD in the vulnerably housed. There is a need to conduct well designed trials that take into account the unique setting of this population and which describe those elements of trauma-informed care that are most important and necessary.

Protocol registration: Open Science Framework: https://osf.io/mpjgn

Keywords: trauma-informed care, post-traumatic stress disorder, homelessness

Strengths and limitations of this study

- First review of how trauma-informed care is being operationalized in the treatment of PTSD for the vulnerably housed.
- Provides a clear picture emphasizing the need to consistently utilize a trauma-informed care approach for PTSD treatment in the vulnerably housed.
- Largely homogenous populations (primarily women and US Veterans) included in studies, may not be representative of broader population.
- Often no mention of ethnic or cultural factors to consider when providing treatment.
- Many of the studies available were of low methodological quality.

Background

Individuals who are vulnerably housed have higher mortality and morbidity rates compared to the general population.[1,2] A common vulnerability factor for many disorders is the experience of trauma.

It is estimated that as many as 91% of individuals who are homeless have experienced at least one traumatic event[3] and up to 99% have experienced childhood trauma.[4,5] A recent qualitative study examining the pathways of men who become homeless long-term in Ontario, found that all of them had experienced complex childhood traumas.[6]

One consequence of exposure to trauma is either post-traumatic stress disorder (PTSD) or complex PTSD (cPTSD). PTSD results in re-experiencing the event, avoidance of reminders of the event, and persistent hypervigilance and awareness of threat. cPTSD results from prolonged threatening events which the individual cannot escape from (such as childhood abuse) and, in addition to PTSD symptoms, results in problems with affect regulation, negative beliefs about oneself, and difficulty in sustaining relationships.[7] Diagnosed PTSD rates in the homeless are significantly higher than the Canadian population, ranging between 21% and 53%[8–11] which may still be an underestimate of the actual prevalence.

Health care poses a unique and difficult challenge in the vulnerably housed, and a history of trauma, often perpetrated by people in caring roles such as parents or other family, makes accepting and engaging in treatment difficult.[6,12] Being vulnerably housed also exposes people to further traumas and re-victimization. [5,13,14] Further, PTSD is often poorly recognized as many vulnerably housed people with PTSD self-medicate with alcohol or other substances. There are also difficulties with accessing appropriate health care because of poverty and organizational barriers within health care providers.[15] These issues result in an underserved population with complex health needs that traditional mental health care is poorly equipped to serve.[10,16,17] Therefore, providing health care services to the vulnerably housed requires a degree of flexibility in terms of how services are provided, who provides them, when, and where. The approach recommended in clinical guidelines is trauma-informed care.[18–20]

The Substance Abuse and Mental Health Services Administration (SAMHSA) has defined trauma-informed care as a program, organization, or system that realizes the widespread impact of trauma and understands potential paths for healing; recognizes the signs and symptoms of trauma in staff, clients, and others involved with the system; and responds by fully integrating knowledge about trauma into policies, procedures, practices, and settings.[21] In 2010, Hopper described the four core principles of trauma-informed care in homeless services as trauma awareness, safety, choice and empowerment and a strengths based approach. The National Centre on Family Homelessness outlined several reasons why programs need to be trauma-informed,[22] including that trauma can impact how people access services, including viewing people and services as unsafe; recognition that people adapt to trauma to keep themselves safe including abusing substances, becoming aggressive, or withdrawing; and, programs and services cannot be “one size fits all”.

None of the five major Clinical Practice Guidelines for the treatment of PTSD[23] address the treatment of homeless people apart from the National Institute for Health and Care Excellence (NICE) guidance which states, “that methods of access to services take into account the needs of specific populations of people with PTSD, ...including people who are homeless”. It doesn’t describe what these methods of access may be. A recent clinical practice guideline for the homeless and vulnerably housed does not include treatment for PTSD although it does recommend trauma-informed care without defining what this is.[20]

People who are vulnerably housed are unique amongst those who have PTSD because of the very high rates of exposure to trauma; the frequent use of substances to self-medicate symptoms; high rates of physical and mental comorbidities; the difficulty of forming caring relationships; and the difficulty of engaging with traditional health services often due to poverty and systemic barriers. We conducted this scoping review to explore the literature on what treatments have been used in this population and how trauma-informed care has been used to deliver these treatments.

Objectives and rationale

This scoping review aims to provide an overview of the literature on the treatment of PTSD and cPTSD in individuals who are vulnerably housed, how these treatments have been delivered and, if trauma-informed care was used, how that was operationalized.

The specific research questions guiding this scoping review are:

1. What interventions are described in the literature for the treatment of PTSD and cPTSD in individuals who are vulnerably housed?
2. Are there any interventions for treatment of PTSD and cPTSD in the vulnerably housed which are described as trauma-informed, and how is this operationalized?

Methods

We conducted a scoping review following the methodological framework proposed by Arksey and O'Malley [24] in addition to the methods manual published by the Joanna Briggs Institute's Methodology for Scoping Reviews.[25] Our review also complies with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.[26] The protocol is registered with the Open Science Framework (https://osf.io/mpjgn).[27]

Information sources and literature search

A health librarian (AH) conducted electronic database searches in MEDLINE, Embase, PsycINFO (via Ovid), CINAHL (via EBSCO), The Cochrane Library (via Wiley), Web of Science and PTSDpubs (via Proquest) from inception until March 2020. The search was peer reviewed following the Peer Review of Electronic Search Strategies (PRESS) guidelines.[28] The full search strategy is available in an additional file (Appendix 1). No limits to language or publication date were applied. A thorough targeted search of the grey literature was conducted to identify any non-indexed studies including unpublished trial data, dissertations, theses, and conference proceedings. The Canadian Agency for Drugs and Technologies in Health (CADTH) Grey Matters Checklist was used to structure our grey literature search as well as identify key websites (i.e., organizations that focus on homelessness). We also hand-searched the reference list of identified reports for additional relevant studies that were not captured in the initial search.

Study selection: inclusion criteria

We included published and unpublished primary research studies reporting any quantitative, qualitative, mixed- or multi-methods research which includes comparative and non-comparative methods evaluating an intervention that looks to treat PTSD in adults (18 years of age or older) who are vulnerably housed. For the purposes of this review, vulnerably housed populations are defined as those who are unsheltered, emergency sheltered, provisionally accommodated, and/or at risk of homelessness.[29] Study designs include randomized controlled trials (RCTs), cluster RCTs, quasi-

experimental studies, cohort studies, cross-sectional/survey studies, case studies and controlled before and after studies. We excluded reviews, commentaries, and editorials.

Study selection: Screening process

The citations from our comprehensive search strategy were uploaded into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia. Available at www.covidence.org). The screening process included phase I (titles and abstracts) and phase II (full texts) to identify relevant studies. In both phases, titles were screened in duplicate by two independent reviewers (AB, KC, MK) following the eligibility criteria previously outlined. Prior to each stage of screening, all reviewers ran pilot screening to identify and address any inconsistencies in applying the inclusion and exclusion criteria. Disagreements between reviewers were resolved by discussion and consultation of a third party (SH) if a consensus could not be reached.

Data abstraction and charting

All included full-text studies were reviewed and abstracted by a single reviewer (AB) using a pilot-tested data abstraction form in Excel. Data that was abstracted included study characteristics, study design, population characteristics, details about the intervention and the trauma-informed approach, and any key findings. A secondary reviewer (KC, MK) verified the abstracted data and any discrepancies between reviewers were resolved through discussion.

The charting process included organizing and interpreting data by sifting, categorizing, and sorting material according to key issues and themes.[24] We charted the data based on whether the interventions to treat PTSD were individual or groups-based therapies and then again based on treatment type (i.e., cognitive-based therapy, pharmacological, contingency management, etc.).

We assessed evidence level by the approach outlined by Burns, Rohrich and Chung (2012) in The Levels of Evidence and their role in Evidence-Based Medicine (see Burns et al. 2012, p.10, Table 4 for Levels of Evidence for Therapeutic Studies).[30] We decided if the treatment was delivered by a trauma-informed approach by examining the components as outlined by Hooper et al (2010).[18] Studies were marked as “Yes” if they explicitly stated using a trauma-informed approach, while those that used components of a trauma-informed approach, but did not explicitly state a trauma-informed approach were marked as "partial."

Patient Involvement

Persons with lived experience were included in the design stage of this project. Patients were not directly involved with the scoping review process. However, patients will be engaged for design and dissemination during the second phase of this project as informed by this scoping review.

Results

The electronic search resulted in a total of 2,201 citations. We identified 1 study in our grey literature search. After de-duplication, 2,189 unique titles and abstracts were screened at phase I, of which 2,045 records were excluded, and 144 full-text articles were moved to phase II screening. A total of 26 articles met our inclusion criteria. The details of our selection process are illustrated in our PRISMA flow-chart in Figure 1.

Most studies were conducted in the USA, apart from three studies which were from Canada, Spain, and the Netherlands published between the years 1999 and 2020. We identified 6 randomized-controlled trials (RCT), one quasi-RCT, 5 pre-post interventional studies, 4 case studies, and 3 pilot trials. A description of included studies is provided in Table 1.

Table 1 Summary of study characteristics

Author (year)	Country	Study design	Sample size	Mean age (SD)	Gender	PTSD measurement	Intervention	Intervention length and dose	Was it a trauma-informed approach?	Evidence level
Abramovich et al. (2020)	Canada	Case study	1	23	Trans-woman	Physician made a diagnosis	Pharmacological, psychotherapy	Weekly psychotherapy, daily mirtazapine and prazosin taken at bedtime	Partial, the care team integrated a social determinants of health–based approach into her treatment plan	4
Blitz (2006)	USA	Pre-post interventional study [Dissertation]	23	28.3	Women	Self-report using the Davidson Trauma Scale	Psychoeducation, individual therapy sessions, psychiatric consultation, case management meetings	Length of shelter stay (study measured up to 90 days)	Partial, used SELF model	4
Brewer (2019)	USA	Pre-post interventional study	48	37.5	Men (25%), Women (75%)	Provisional diagnosis for PTSD, as self-reported by the PCL-5 questionnaire. Participants were considered to qualify for a provisional diagnosis of PTSD if they had a total score exceeding 33 points	Psychoeducation, process oriented, and experiential exercises	9-week intervention. Each group met once per week and each meeting lasted approximately one and a half hours.	Yes	2B
Burns et al. (2010)	USA	RCT	206	40.1 (7.1)	Men (72.3%)	Structured Clinical Interview for the DSM-IV (SCID) (clinician) and Posttraumatic Diagnostic Scale (self-report)	Contingency management for cocaine dependence (behavioural treatment for substance use disorders)	Counselling as needed and weekly goal setting in CM+	No	2B
Carpenter (1999)	USA	Quasi-RCT [Dissertation]	10	35	Women	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient with the Impact of Events Scale	Eye Movement Desensitization and Reprocessing	Following an initial two-hour session, subjects received up to seven one-hour sessions on a twice a week basis	No	1B

de Vicente et al. (2004)	Spain	Single arm pilot study	8	47.8 (6.9)	Women (50%)	Two participants were diagnosed with posttraumatic stress disorder by using the Composite International Diagnostic Interview, PTSD was diagnosed using "Section K" of the Composite International Diagnostic Interview (CIDI) 2.1	Written and verbal emotional disclosure	Four 1-hour sessions over 2 weeks	No	2B
Desai et al. (2008)	USA	Pre-post interventional study	643	43.3 (8.1)	Women	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient using PTSD Checklist scores	Cognitive behavioural therapy	The Phase I intervention lasted if women remained residents of the shelter. The Phase II intervention lasted for six months. After the baseline interview, follow-up interviews were obtained every three months over the course of one year	Partial, used Seeking Safety model	4
Feingold et al. (2018)	USA	Retrospective chart review	81	39.3 (10.98)	Men (53%), Women (48%), Other (1%)	Trauma exposure and posttraumatic distress were evaluated by a clinical interview conducted by trauma therapists and supplemented by patient self report measures using the Diagnostic and Statistical Manual for Mental Disorders Fourth Edition (DSM–IV) and PTSD diagnostic Criterion A event	Cognitive processing therapy, cognitive behavioural therapy, motivational interviewing	Cognitive Processing Therapy was provided in 12 sessions, Cognitive Behavioural Therapy was provided in 8 sessions, Motivational Interviewing is brief in 3-5 sessions	Yes	2B
Garland et al. (2016)	USA	RCT	180	MORE: 37.7 (10.4) CBT: 36.5 (11.2) TAU: 38.7 (9.8)	Men	Diagnostic interviews were conducted by a psychiatrist and/or clinical social worker with training in making addiction and psychiatric disorder diagnoses Semi structured psychiatric interview similar to the Mini-International	Cognitive-behavioural therapy	10 session group interventions at 2 hours each	No	1B

						Neuropsychiatric Interview (MINI) and the PCL-C				
Gorzynski (2018)	USA	Pre-post interventional study [Dissertation]	63	30.7 (7.6)	Women	Self-report, participants were administered the Trauma Symptom Inventory -2 (TSI-2) during the first treatment session	Cognitive-behavioural	8 sessions for 2 hours each over 4 weeks (1 month, with 2 sessions per week)	Partial, used Seeking Safety model	3B
Harpaz-Rotem et al. (2011)	USA	Observational study	451	No RT: 43.5 (8.9) RT: 43.9 (6.7)	Women	Self-report using the posttraumatic Stress Disorder (PTSD) Symptom Checklist (PCL) was used to assess PTSD symptoms	Residential treatment	Minimum of 30 days residence in the program	No	3B
Harris et al. (2019)	USA	Longitudinal study	421	54 (7.52)	Men (71%), Women (28.5%)	Self-report using the 4-item Primary Care PTSD Screen	Supportive Housing	Not reported	No	3B
Held et al. (2015)	USA	Pilot study	47	51.3 (8.4)	Men	Self-report, PTSD Checklist–Specific Stressor Version at baseline	Self-compassion therapy	4 weeks	No	2B
Helfrich et al. (2011)	USA	Longitudinal study	72	Mean: 46.5	Men (55.6%), Women (44.4%)	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the IES-R (Impact of Event Scale Revised)	Life skills intervention	Not reported	No	2B
Johnson et al. (2006)	USA	Pilot study	18	32 (7)	Women	One-week-symptom severity and PTSD diagnostic criteria was assessed by shelter staff using the Clinician Administered PTSD Scale and the Beck Depression Inventory at first presentation	Cognitive behavioural therapy	Twice per week	Partial, used HOPE model	3B
Johnson et al. (2009)	USA	Case study	1	29	Woman	The patient first presented with significant IPV-related PTSD symptoms and no Axis I (American Psychiatric Association, 1994) comorbidity	Cognitive behavioural therapy	12 biweekly sessions over 7 weeks	Partial, used HOPE model	4
Johnson et al. (2011)	USA	RCT	70	32.55 (8)	Women	Shelter staff used the Clinician Administered PTSD	Cognitive behavioural therapy	12 sessions, twice weekly that lasted approximately an 1-1.5 hours	Partial, used HOPE model	1B

						Scale (CAPS) at first presentation				
Johnson et al. (2016)	USA	RCT	60	HOPE + SSS: 33.30 (10.48) SSS: 33.20 (10.39)	Women	All assessments were conducted by trained and blinded doctoral students in psychology Clinician-Administered PTSD Scale (CAPS)	HOPE, a CBT and empowerment-based individual treatment	Participant received 10 sessions in shelter over 10 weeks and then up to 6 sessions post shelter for 3 months for a total of 16 sessions throughout the treatment period	No	1B
Kip et al. (2016)	USA	Prospective cohort treatment study	117	43 (13.2)	Men (92.1%)	A clinical interview and screening that included use of the 17-item Military PTSD Checklist (PCL-M) and PTSD subscale of the 125- item Psychiatric Diagnostic Screening Questionnaire (PDSQ)	Accelerated Resolution Therapy	1-hour session per week for one month	No	2B
Lako et al. (2018)	Netherlands	RCT	136	CTI: 34.24 (8.52) TAU: 33.58 (8.08)	Women	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient with the Impact of Events Scale	Critical time intervention (CTI)	The duration of each phase was predetermined at 3 months (thus 9 months total for CTI).	No	1B
Lester et al. (2007)	USA	RCT	206	CM+: 40.54 (7.35) CM: 40.02 (7.01)	CM+: 74% male CM: 75% male	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the SCID and PDS	Behavioral day treatment, abstinence contingent housing, and abstinence-contingent vocational training	Phase I (months 1–2), Phase II (months 3–6), Phase III (months 7–12), and Phase IV (months 13–18)	No	1B
Liu-Barbaro et al. (2015)	USA	Case study	1	63	Man	The patient met DSM-IV criteria for PTSD and major depressive disorder	Pharmacological	He was started on treatment with sertraline 50 mg, which was titrated to 150 mg over 1 month, and prazosin 1 mg titrated to 4 mg over 2.5 months.	No	4
Morrison et al. (2007)	USA	Case study	1	49	Woman	Not reported	Supportive and pharmacological therapy	Not reported	No	3B

Schueller et al. (2019)	USA	Pilot study	35	19.06 (0.85)	Men (31%), Women (65%), Transgender (3%)	Current symptoms of PTSD were assessed using the 20-item PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-5 (PCL-5) at baseline and 1 month post intervention	Mobile phone-based therapy (in line with cognitive behavioural therapy principles)	Three 30-min phone sessions over 1 month	No	3B
Van Voorhees et al. (2019)	USA	Mixed methods	22	55.2	Men	PTSD was self-reported using a modified version of the Basic Shelter Inventory	Peer mentors	Intensity of contact was suggested to be twice weekly for the first month, gradually declining over the next 6 months, with ad hoc contacts as needed. Actual contact was dictated by the care plan and veteran preference.	No	3B
Wong (2019)	USA	Pre-post interventional study	5	Unclear	Men	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the SPRINT scale	Flash Technique	Treatment consisted of eight 50-minute sessions, 1 session per week (thus lasting 8 weeks total)	Yes	2B

Research question 1: What interventions are described in the literature for the treatment of PTSD and cPTSD in individuals who are vulnerably housed?

Trauma focused psychotherapies

We identified four studies that used an intervention where participants were asked to recall details of the traumatic events. One non-randomized study evaluated the effectiveness of using eye movement desensitization and reprocessing (EMDR) in 10 women living in a battered women's shelter in Michigan.[31] Both the five women who received EMDR and the five women who received only the standard shelter program experienced significant reductions in PTSD symptoms although the reduction was greater in the EMDR group. One case series of five men attending a trauma group in a Californian Homeless Shelter study used the Flash Technique [32] which is part of the preparatory phase of EMDR treatment. Another observational study evaluated the feasibility of using accelerated resolution therapy [33] in a cohort of 23 homeless veterans compared to 94 community living veterans in Tampa, Florida. Accelerated resolution therapy involves brief recall of traumatic events, imagery rescripting and some elements of EMDR. About half of the homeless group completed treatment compared to 80% of community veterans. The reasons for non-completion in the homeless were moving away from the shelter, conflict with work, and other life circumstances. The authors comment that therapies for the homeless need to be brief and need to take into account a range of comorbidities and significant life challenges. They also commented on the difficulties of finding a private quiet setting which isn't always available in a homeless shelter. De Vicente et al[34] described a case series of 8 homeless people, two of whom were diagnosed with PTSD, attending a day centre in Madrid, Spain for the homeless. They received an emotional disclosure protocol where participants were asked to write or speak about their thoughts and feelings associated with their trauma.

Non-trauma psychotherapies

Johnson et al. evaluated a cognitive-behavioral therapy (CBT) and empowerment-based individual treatment called Health to Overcome PTSD through Empowerment (HOPE). They reported a case study, pilot study, and two RCTs in women with PTSD or subthreshold PTSD from "battered women's shelters" comparing HOPE with "standard shelter treatment".[35–38] The HOPE therapy focused on addressing PTSD resulting from intimate partner violence, while using many traditional components of CBT for PTSD (for example cognitive-restructuring, skill building) with a focus on stabilization, safety and empowerment. In the first RCT of 70 people, they found no difference in PTSD outcomes with one in four participants attending all 12 HOPE sessions and about two-thirds attending five or more sessions. Participants were excluded if they were psychotic, suicidal, had been diagnosed with bipolar disorder or had any change in psychotropic medication in the previous month. In the second RCT of 60 women in shelters, the treatment was continued after the women had left the shelter but again did not find a significant difference in PTSD outcomes.

Two observational studies aimed to evaluate the effectiveness of a CBT based group therapy, Seeking Safety in homeless women.[39,40] Seeking Safety is a manualized CBT intervention consisting of 25 individual modules that address issues of safe behaviors and relationships, life skills, and relapse prevention. In the 2008 observational cohort study, 91 female US veterans who were vulnerably housed were offered Seeking Safety and were compared to a historical cohort of 359 women who did not receive Seeking Safety. It is unclear how many of the women had PTSD but there was a significant decrease in PTSD symptoms over the whole group although the differences were small. The Seeking

Safety group significantly increased their drug use. In the 2017 pretest post-test interventional study, 63 homeless women in an in-patient residential setting who had been exposed to trauma and had substance use disorders were offered an abbreviated version of Seeking Safety. The abbreviated version was developed in response to criticism that the full version was too long, required high levels of participant commitment, and was unsuitable for "transient" populations. The authors found that after eight two-hour sessions over four weeks there was a significant improvement in perceived self-efficacy in the two-thirds of the sample who completed a minimum of six out of eight sessions. The Veterans Affairs Clinical Practice Guidelines concludes that there is insufficient evidence to recommend for or against Seeking Safety for treatment of PTSD in the general population.

Feingold [41] reported an observational cohort study of cognitive processing therapy, CBT and motivational interviewing in adults within a US jail diversion program. About a third of their population of 81 participants were vulnerably housed and 62% were diagnosed with PTSD. The main finding was that about half of the sample did not complete their treatment. Increased completion rates were associated with emergency therapy sessions and the authors comment on the need for flexibility in delivering care to this population. In those who did complete their treatment there was a significant decrease in PTSD symptoms.

Schueller [42] reported a single group pilot study evaluating the feasibility and acceptability of a mobile phone-based therapy that used an app designed to help provide coping skills to 35 young adults (18-24 years) recruited from homeless shelters in Chicago. Participants received a mobile phone, a data plan, the app and one month of support from a coach consisting of up to three brief sessions. Just over half of the participants completed all three coaching sessions but there were no significant changes in clinical outcomes.

Contingency management

In one unblinded RCT, 187 homeless people from Alabama, dependent on cocaine, were randomized to contingency management or contingency management plus. At the start of the study 21 participants had a diagnosis of PTSD. Housing was dependent on negative urine screens for cocaine. There did not appear to be any difference in outcomes between the two groups.[43,44]

Educational interventions

One RCT examined the effectiveness of a critical time intervention for abused women who were transitioning from women's shelters to community living.[45] Critical time intervention is a time-limited, strengths-based intervention designed to support vulnerable people during transitions in their lives. This study of 136 Dutch women found a significant decrease in PTSD symptoms after nine months which was mainly due to a reduction in symptoms in non-Dutch speaking women. Another pilot study evaluated the effect of self-compassion therapy compared to stress inoculation on trauma-related guilt and PTSD severity.[46] The authors randomized 47 US veterans living in transitional housing to receive workbooks on the different therapies. Symptoms of PTSD did not significantly differ between the two groups after treatment. Twenty of the participants did not complete the workbooks. One qualitative study of 22 homeless US veterans hypothesised that feeling disconnected was associated with poor outcomes in those with PTSD.[47] A pretest and post-test study of 8 adults looked to evaluate the treatment effects of Building Bridges, a group-based psychotherapy adapted for parents living in homeless shelters in San Francisco.[48] Building Bridges consisted of nine 90 minute groups that included psychoeducation, mindfulness and experiential exercises. There was no significant impact on PTSD symptoms. The authors comment on the difficulty of providing groups in a shelter setting because of staff turnover and restrictions, such as length of stay, at different sites. Another pretest post-test study examined the

impact of a life skills group and individual program on 72 individuals who had been recently homeless living in emergency housing.[49] Eight out of ten participants reported a history of abuse. Symptoms of PTSD significantly decreased after the intervention. The life skills intervention consisted of one or more modules which focused on food management, money management, room and self-care management and safe community participation.

Housing interventions

We identified three studies that used housing and shelter as a way to provide therapy.[50–52] One study used a shelter as a restorative milieu that integrated trauma recovery and social justice empowerment for Black and Latino women in New York.[50] This pretest post-test descriptive and qualitative study of about 20 women found a reduction in PTSD symptoms over time and an appreciation by the residents that the shelter milieu felt safe and nurturing. Another study focused on providing supportive housing to 421 homeless adults in Los Angeles.[52] This descriptive pretest and post-test study found that about half the sample had probable PTSD at baseline which reduced to 40% at three, six and 12 months. A cohort study of homeless US female veterans compared 234 who received at least 30 days of residential treatment with 217 who received less than 30 days. The study was able to follow up about half the participants after one year. The authors found a small but significant improvement in PTSD symptoms in those who received residential treatment.[51]

Pharmacotherapy

There were three single person case studies describing successful pharmacological treatments.[53–55] In one study, a 23-year-old transgender refugee woman in an emergency shelter in Canada was prescribed mirtazapine 60mg for PTSD and insomnia, and prazosin 6mg for nightmares.[53] Liu-Barbaro and Stein[54] describe treating a 63-year-old Ethiopian man living in a homeless shelter with a major depressive disorder and PTSD with dissociative symptoms. He was treated successfully with sertraline 150mg and prazosin 4mg. The authors note that this patient had suffered for years before being diagnosed and treated.[54] Finally, the last study reported a "composite case" of a 49-year-old woman with PTSD prescribed sertraline 150mg and supportive therapy.[55]

Research question 2: Are there any interventions for treatment of PTSD and cPTSD in the vulnerably housed which are described as trauma-informed, and how is this operationalized?

We identified three studies that explicitly stated using a trauma-informed approach to deliver treatment.[32,41,48] Two studies did not clearly describe how they operationalized their trauma-informed approach.[32,41] One study investigating the Building Bridges intervention described using a trauma-informed approach based on the work by Guarino et al.[56] As a result Building Bridges is based on understanding how trauma affects parents' and children's cognitions, emotions and behaviors. The authors stressed that emotional safety, and the desire to feel heard, protected, comforted, and understood is an important aspect in treating populations who have experienced trauma.

There were 7 studies that did not explicitly state using a trauma-informed approach; however they did describe components of their treatment that align with the concepts of a trauma-informed care.[35–39,50,53,57] The HOPE intervention focused on the impact of present trauma of interpersonal violence and did not focus on trauma from the past. The research group investigating HOPE used Herman's[58] multistage model of recovery which addresses the treatment needs of battered women and incorporates three stages of recovery: (a) establishing safety, self-care, and protection, (b)

remembrance and mourning, and (c) reconnection. The authors also note the importance of flexibility and being available when people are ready to engage.[59] Two studies used Seeking Safety[39,57] which they describe as based on five central ideas: "1) Safety as the priority of this first stage treatment; 2) integrated treatment of PTSD and substance abuse; 3) a focus on ideals; 4) four content areas: cognitive, behavioral, interpersonal, and case management; and 5) attention to therapeutic processes." The goals of the treatment are to create an empathetic approach where the clients "own" the trauma, to provide education, to validate the connection between trauma and substance abuse, and to offer safe coping skills to manage the symptoms, impulses, and emotions that often come with these co-occurring disorders. One case study integrated a social determinants of health based approach into the treatment plan.[53]

Discussion

Despite the high prevalence of PTSD in the vulnerably housed there is little evidence of what is effective treatment. Figure 2 outlines how the 26 studies identified map onto the four components of trauma-informed care. The four trauma-informed interventions were small case series, and the non-trauma focused therapies were generally ineffective which is consistent with the broader literature. A novel intervention in this population is using housing as an intervention but the impact on PTSD symptoms was relatively modest and the strength of evidence low. A systematic review of permanent supportive housing for homeless individuals found no impact on psychiatric symptoms although there was greater housing stability compared to usual care.[60] What is notable is the difficulty of keeping people in treatment with most studies reporting low engagement with treatment or low follow-up rates. Few studies described what proportion of people agreed to participate in the treatments but the small numbers in most studies suggest that engagement in treatment is difficult.

We found three studies that explicitly stated using a trauma-informed approach, while seven described a method that incorporated all or some components of a trauma-informed care approach. Although guidelines and organizations recognize the need for a trauma-informed approach,[20,21,61,62] it is unclear how this translates into action or what the most important components are. This review highlights the need to operationalize trauma-informed care and to identify the necessary and most important components in the vulnerably housed. Another area that is unexplored is whether what people with lived experience consider to be trauma-informed care is different to what providers would consider. The impact of an intervention that is trauma-informed is most likely to be seen in increased rates of engagement and completion of treatment.

Our review has some important limitations to note. Firstly, the interventions to treat PTSD in the vulnerably housed are primarily studied in women and US Veterans. Similarly, many studies did not mention any ethnic or cultural factors to consider when providing treatment for the vulnerably housed. Second, is that there is a lack of qualitative and experiential data to illustrate any other meaningful changes that may have occurred during treatment.

Lastly, there is low methodological quality and reporting of studies. Although a formal quality assessment was not performed, the levels of evidence were rated for each study and most studies were rated lower quality with small sample sizes or low rates of follow-up. Any conclusions made from these studies should be interpreted with caution.

Conclusion

There is currently little evidence on how trauma-informed care for PTSD in the vulnerably housed should be delivered and whether it is effective. Poor quality trials make interpretation of acceptability, feasibility and effectiveness difficult. Evaluation of interventions should be expanded to include not only symptom improvement, but experiential data informed by the engagement of patients as partners. Measures of symptom severity alone often do not provide a complete picture of the patient experience, excluding factors that may be important such as increased understanding of their illness, skill building, coping and wellbeing.

This review has also highlighted the need for pragmatic trial designs instead of "one-size fits all" interventions and delivery approaches. The development of a trauma-informed care strategy should be adaptable to multiple cultural or geographic situations to ensure that healthcare providers are able to deliver meaningful, evidence-based care and no individuals are "left behind". Any guidance should include recommendations for implementation or adaptation to ensure fidelity for comparison of effectiveness while allowing for flexibility in delivery.

Managing PTSD and complex PTSD can be challenging for many service providers in a population where appropriate treatment approaches are poorly understood, under-researched and lack a patient-oriented perspective. This scoping review has identified several gaps in providing trauma-informed care to a vulnerable population. There is a need to conduct well-designed trials with mixed-methods approaches, focusing on trauma-informed care principles to improve treatments for the vulnerably housed experiencing or at high risk of developing mental health issues. Healthcare providers and policymakers need more guidance on working with the vulnerably housed, including on how to collect data and outcomes specific to trauma-informed care.

Contributors
This research was conceptualized by SH, while AB and NEE contributed to the study design. Search Strategy and searches were completed by AH. While title, abstract and full screenings, and data extraction were carried out by AB, KC, MK under guidance from SH. Manuscript was drafted by AB, NEE and SH. Critical review of manuscript was undertaken by all authors. All authors approved the final manuscript.

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Figure Legend

Trauma informed care (from Hopper) described in the scoping review (Outer Circle)

Types of intervention found in the scoping review (Middle Circle)

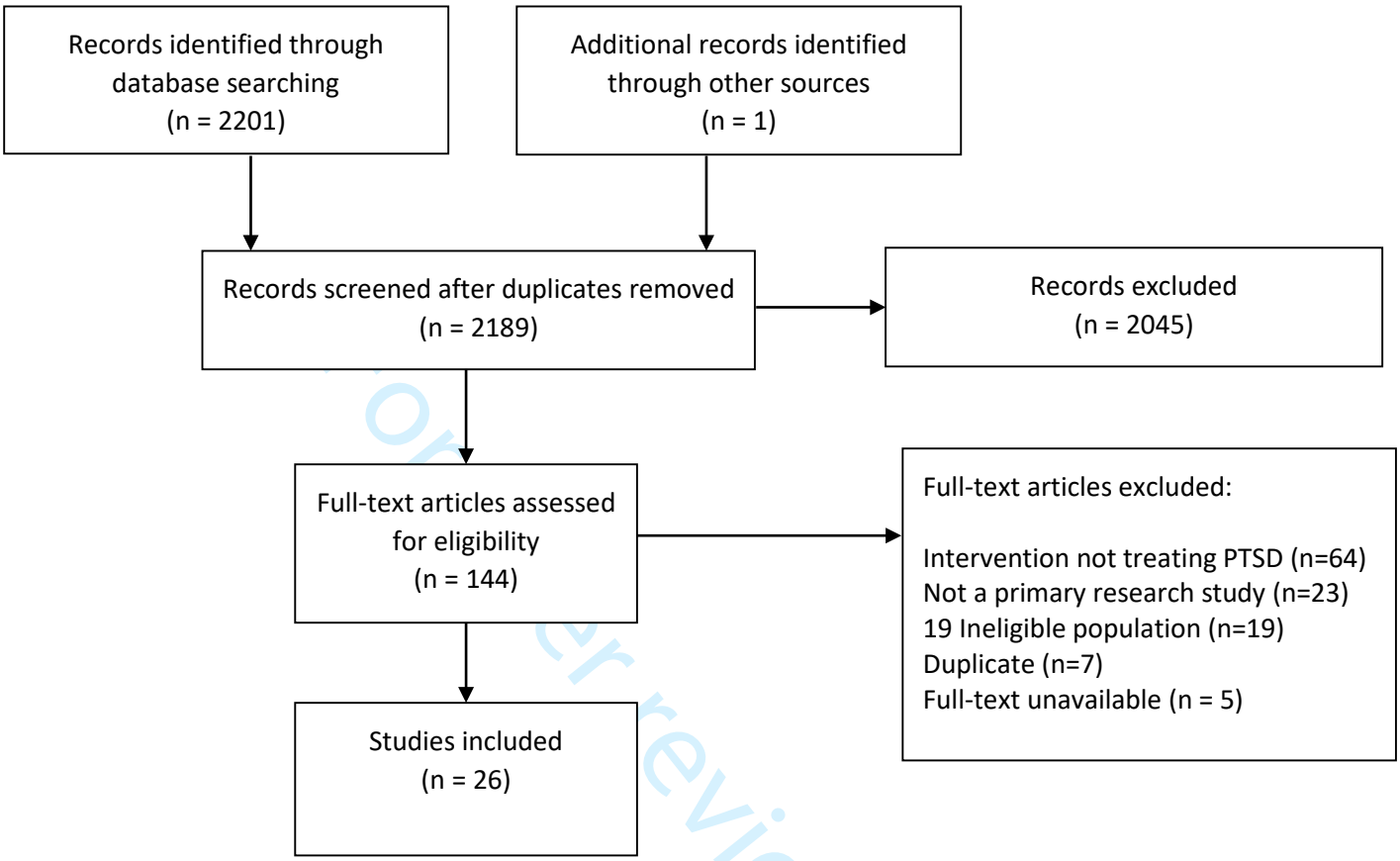

Figure 1 PRISMA flow-chart of included studies

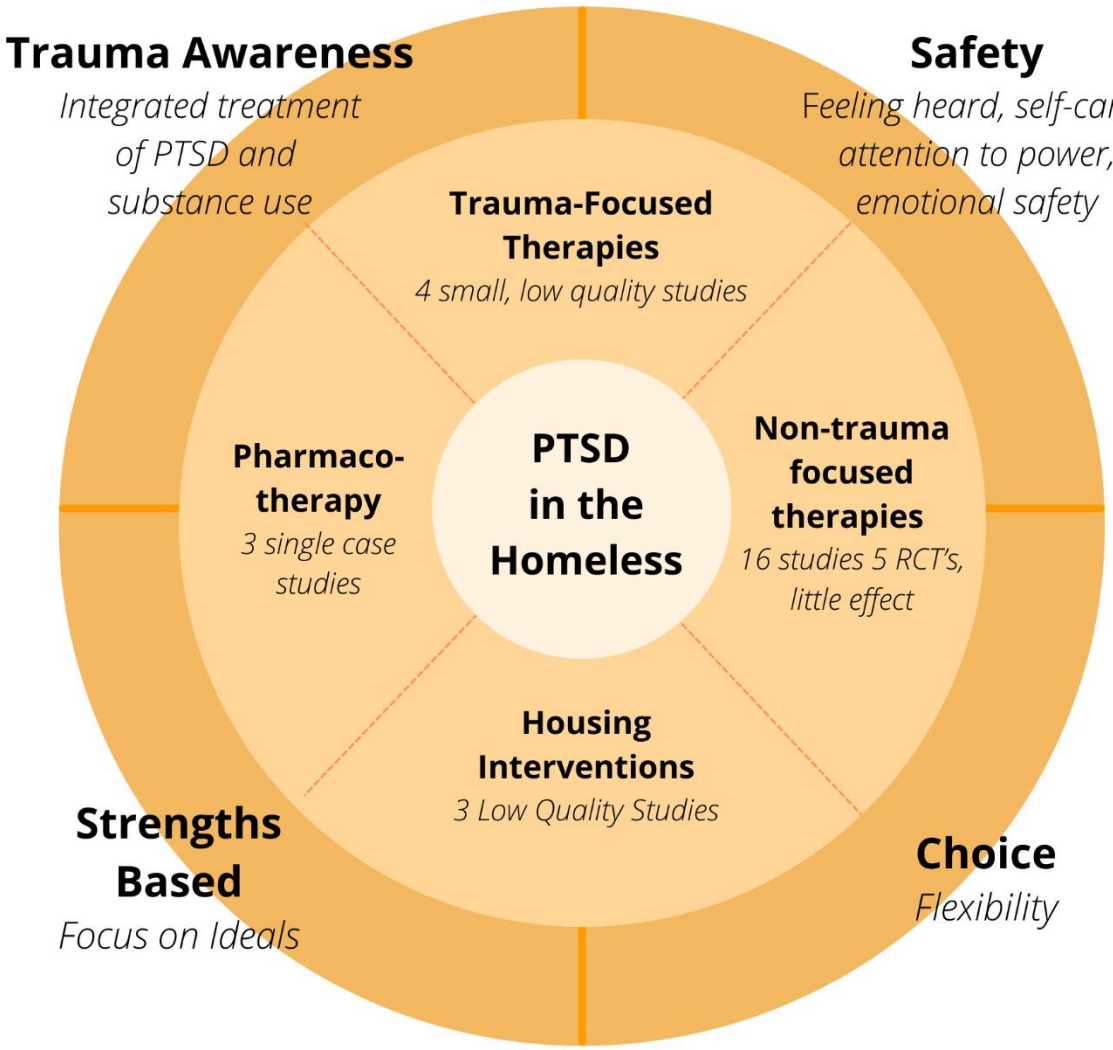

Figure 2. Summary of findings

Appendix 1 - Final literature search strategies

Limits: none

Searches run on March 26, 2020

Databases:

- Medline (medall)
- Embase (emczd)
- APA PsycInfo (psyh)
- CINAHL
- Cochrane Library (via Wiley platform)
- WebOfScience
- PtsdPubs

Embase, Ovid MEDLINE(R), APA PsycInfo

Search history sorted by search number ascending

#	Searches	Results
1	exp Homeless Persons/	10564
2	homeless*.ti,ab,kf.	33339
3	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kf.	3254
4	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab,kf.	12953
5	housing outcome*.ti,ab,kf.	249
6	(vulnerabl* adj2 hous*).ti,ab,kf.	564
7	(no housing or no fixed address or squatter* or evict*).ti,ab,kf.	3651
8	or/1-7	52487
9	exp housing/	68128
10	housing.ti,ab,kf.	80001
11	or/9-10	117889
12	vulnerable populations/	23575
13	exp poverty/	97990
14	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab,kf.	1851735
15	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kf.	120846
16	or/12-15	2005185
17	and/11,16	17080

18	or/8,17	65715
19	"trauma and stressor related disorders"/	48773
20	exp stress disorders, traumatic/	94387
21	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab,kf.	203057
22	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab,kf.	115064
23	(acute stress disorder* or combat disorder* or war neuros*).ti,ab,kf.	2822
24	(trauma-informed or trauma-focus*).ti,ab,kf.	6927
25	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab,kf.	58728
26	or/19-25	281197
27	and/18,26	1582
28	27 use medall	473
29	exp homeless person/	10564
30	homeless*.ti,ab,kw.	33547
31	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kw.	3262
32	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab,kw.	12990
33	housing outcome*.ti,ab,kw.	249
34	(vulnerabl* adj2 hous*).ti,ab,kw.	578
35	(no housing or no fixed address or squatter* or evict*).ti,ab,kw.	3669
36	or/29-35	52686
37	housing/	49217
38	real estate/	231
39	housing.ti,ab,kw.	80421
40	or/37-39	103700
41	vulnerable population/	26323
42	poverty/	92527
43	exp lowest income group/	27543
44	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab,kw.	1853972
45	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kw.	120465
46	or/41-45	2010908
47	and/40,46	16486
48	or/36,47	65390
49	posttraumatic stress disorder/	122887
50	psychotrauma/	9075
51	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab,kw.	204775

52	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab,kw.	116228
53	(acute stress disorder* or combat disorder* or war neuros*).ti,ab,kw.	2936
54	(trauma-informed or trauma-focus*).ti,ab,kw.	6948
55	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab,kw.	59229
56	or/49-55	287064
57	and/48,56	1606
58	57 use emczd	679
59	exp homeless/	7407
60	homeless*.ti,ab.	33202
61	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab.	3245
62	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab.	12920
63	housing outcome*.ti,ab.	249
64	(vulnerabl* adj2 hous*).ti,ab.	562
65	(no housing or no fixed address or squatter* or evict*).ti,ab.	3638
66	or/59-65	50449
67	exp housing/	68128
68	exp living arrangements/	68050
69	housing.ti,ab.	79147
70	or/67-69	164338
71	at risk populations/	37373
72	poverty/	92527
73	runaway behavior/	1361
74	lower income level/	8653
75	disadvantaged/	17646
76	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab.	1849039
77	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab.	120201
78	or/71-77	2029780
79	and/70,78	23725
80	or/66,79	70172
81	"Stress and Trauma Related Disorders"/	13
82	exp Posttraumatic Stress Disorder/	122996
83	Acute Stress Disorder/	2410
84	Post-Traumatic Stress/	54050
85	combat experience/	2864
86	emotional trauma/	24247
87	traumatic neurosis/	334

88	stress reactions/	85294
89	trauma/	480688
90	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab.	201831
91	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab.	114265
92	(acute stress disorder* or combat disorder* or war neuros*).ti,ab.	2797
93	or/81-92	788522
94	exp "stress and trauma related disorders"/	33752
95	exp trauma/	3330169
96	or/94-95	3354276
97	exp intervention/	103258
98	and/96-97	4077
99	(trauma-informed or trauma-focus*).ti,ab.	6863
100	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab.	58567
101	or/98-100	64494
102	or/93,101	822408
103	and/80,102	2442
104	103 use psyh	712
105	or/28,58,104	1864
106	remove duplicates from 105	1209

CINAHL

#	Query	Results
S7	S5 AND S6	620
S6	(MH "Stress Disorders, Post-Traumatic+") OR TX (post-traumatic OR posttraumatic OR ptsd OR "traumatic disorder*") OR TX ((posttrauma* OR post-trauma*) N3 (stress* OR disorder* OR psych* OR symptom*)) OR TX ("acute stress disorder*" OR "combat disorder*" OR "war neuros*") OR TX (trauma-informed OR trauma-focus*) OR TX (trauma* N3 (care OR treatment* OR therap* OR intervention*))	57,274
S5	S1 OR S4	20,662
S4	S2 AND S3	5,267

S3	((MH "Poverty") OR (MH "Indigent Persons") OR (MH "Vulnerability")) OR TX (poor OR poverty OR vulnerabl*) OR TX (low N3 (income* or revenu*)) OR TX ((marginal OR precarious* OR disadvantag* OR "at risk") N3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?))	322,387
S2	(MH "Housing+") OR TX housing*	23,749
S1	((MH "Homelessness") OR (MH "Homeless Persons")) OR TX homeless* OR TX ((street* OR "no home" OR "no homes") N3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) OR TX ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) N3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)) OR TX ("housing outcome" OR "housing outcomes" OR "no housing" OR "no fixed address" OR squatter* OR evict*) OR TX vulnerabl* N2 hous*	16,888

Web of Science:

Set	**Results**	**Save History / Create AlertOpen Saved History**
# 7	**655**	#6 AND #5 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 6	**112,391**	**TOPIC:** (post-traumatic OR posttraumatic OR ptsd OR "traumatic disorder*") *OR* **TOPIC:** ((posttrauma* OR post-trauma*) NEAR/3 (stress* OR disorder* OR psych* OR symptom*)) *OR* **TOPIC:** ("acute stress disorder*" OR "combat disorder*" OR "war neuros*") *OR* **TOPIC:** (trauma-informed OR trauma-

		focus*) *OR* **TOPIC:** (trauma* NEAR/3 (care OR treatment* OR therap* OR intervention*)) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 5	**45,160**	#4 OR #1 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 4	**13,545**	#3 AND #2 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 3	**1,147,594**	**TOPIC:** (poor OR poverty OR vulnerabl*) *OR* **TOPIC:** (low NEAR/3 (income*)) *OR* **TOPIC:** ((marginal OR precarious* OR disadvantag* OR "at risk") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 2	**100,783**	**TOPIC:** (housing*) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 1	**33,943**	**TOPIC:** (homeless* OR "housing outcome" OR "housing outcomes" OR "no housing" OR "no fixed address" OR squatter* OR evict*) *OR* **TOPIC:** ((street* OR "no home" OR "no homes") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) *OR* **TOPIC:** ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)) *OR* **TOPIC:** (vulnerabl* NEAR/2 hous*) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

Cochrane Library (61 references from CENTRAL only) - no results in Cochrane Database of Systematic Reviews, although the entire library was searched.

Search Name:

Date Run: 26/03/2020 18:04:44

Comment:

ID Search Hits

#1 MeSH descriptor: [Homeless Persons] explode all trees 332

#2 (homeless* OR "no housing" OR "no fixed address" OR squatter* OR evict* OR "housing outcome*"):ti,ab,kw OR (vulnerabl* NEAR/2 hous*):ti,ab,kw OR ((street* OR "no home" OR "no homes") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)):ti,ab,kw OR ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)):ti,ab,kw (Word variations have been searched) 1258

#3 #1 OR #2 1258

#4 MeSH descriptor: [Housing] explode all trees 393

#5 (housing*):ti,ab,kw 1497

#6 #4 OR #5 1504

#7 MeSH descriptor: [Vulnerable Populations] this term only 277

#8 MeSH descriptor: [Poverty] explode all trees 1633

#9 (low NEAR/3 income*):ti,ab,kw OR (poor OR poverty OR vulnerabl*):ti,ab,kw OR ((marginal OR precarious* OR disadvantag* OR "at risk") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)):ti,ab,kw (Word variations have been searched) 77513

#10 #7 OR #8 OR #9 77513

#11 #6 AND #10 415

#12 #3 OR #11 1564

#13 MeSH descriptor: [Trauma and Stressor Related Disorders] this term only 6

#14 MeSH descriptor: [Stress Disorders, Traumatic] explode all trees 2589

#15 (post-traumatic OR posttraumatic OR ptsd OR traumatic disorder*):ti,ab,kw OR ((posttrauma* OR post-trauma*) NEAR/3 (stress* OR disorder* OR psych* OR symptom*)):ti,ab,kw OR (acute stress disorder* OR combat disorder* OR war neuros*):ti,ab,kw OR (trauma-informed OR trauma-focus*):ti,ab,kw OR (trauma* NEAR/3 (care OR treatment* OR therap* OR intervention*)):ti,ab,kw 10583

#16 #13 OR #14 OR #15 10604

#17 #12 AND #16 61

PTSDpubs, formerly known as PILOTS, is a freely available, bibliographic database providing access to the worldwide literature on PTSD and other mental health consequences of traumatic events.

PTSDpubs has unique features that set it apart from other databases. This database offers:

- A custom PTSD and trauma focused thesaurus to help you create a precise search. This unique thesaurus includes specific PTSD symptoms, like hypervigilance, as well as terms such as PTSD (DSM-5) and PTSD (ICD-11) to help you search by diagnostic criteria.
- A detailed listing of tests and measures. Each record in PTSDpubs lists all instruments used within the publication, and you can search for publications that use a specific test or measure.
- A comprehensive range of publication types, including journal articles, books, reports, newsletters, and dissertations.
- Cross-disciplinary coverage of all publications relevant to PTSD and psychological trauma. PTSDpubs does not limit its coverage to selected journals, but tries to include all relevant publications.

~~Search Strategy~~

~~Set#: S11~~

~~Searched for: (MAINSUBJECT.EXACT("Homeless Persons") OR MAINSUBJECT.EXACT("Homelessness") OR MAINSUBJECT.EXACT("Shelter Residents")) OR (homeless* OR "housing outcome" OR "housing outcomes" OR "no home" OR "no homes" OR "no housing" OR evict*) OR (squatter* OR vagrant* OR street-involved OR street person OR street people OR street youth OR "no fixed address" OR "temporary housing" OR "unstably housed" OR "housing instability")~~

~~Databases: PTSDpubs~~

~~Results: 657~~

~~Set#: S13~~

~~Searched for: (MAINSUBJECT.EXACT("Trauma Focused Cognitive Behavioral Therapy") OR MAINSUBJECT.EXACT("Trauma Focused Group Psychotherapy")) OR (trauma-informed OR trauma-focus*) OR (trauma* NEAR/3 (care OR treatment* OR therap* OR intervention*))~~

~~Databases: PTSDpubs~~

~~Results: 5368~~

~~Set#: S14~~

~~Searched for: S11 AND S13~~

~~Databases: PTSDpubs~~

~~These databases are searched for part of your query.~~

~~Results: 41~~

Search Strategy

Set#: S1

Searched for: MAINSUBJECT.EXACT("Homeless Persons") OR MAINSUBJECT.EXACT("Homelessness") OR MAINSUBJECT.EXACT("Shelter Residents")

Databases: PTSDpubs

Results: 499

Set#: S12

Searched for: vulnerab* AND hous*

Databases: PTSDpubs

Results: 50

Set#: S13

Searched for: homeless* OR "no housing" OR "no fixed address" OR squatter* OR evict* OR "housing outcome" OR "housing outcomes" OR "no home" OR "no homes"

Databases: PTSDpubs

Results: 466

Set#: S16

Searched for: (hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)

Databases: PTSDpubs

Results: 76

Set#: S17

Searched for: street* NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)

Databases: PTSDpubs

Results: 31

Set#: S19

Searched for: S1 OR S12 OR S13 OR S16 OR S17

Databases: PTSDpubs

These databases are searched for part of your query.

Results: 719

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

BMJ Open

Interventions to treat post-traumatic disorder (PTSD) in vulnerably housed populations and trauma-informed care: A scoping review

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Secondary Subject Heading:	Health services research
Keywords:	Adult psychiatry < PSYCHIATRY, PSYCHIATRY, Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

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Title: Interventions to treat post-traumatic disorder (PTSD) in vulnerably housed populations and trauma-informed care: A scoping review

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Protocol registration: Open Science Framework: https://osf.io/mpjgn

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Word Count: 4656

Abstract

Objectives The goals of this study are to identify and analyse interventions that aim to treat Post Traumatic Stress Disorder (PTSD) and complex PTSD in individuals who are vulnerably housed and to describe how these treatments have been delivered using trauma-informed care.

Design Scoping review

Search strategy We searched electronic databases including MEDLINE, Embase, PsycINFO, CINAHL, the Cochrane Library, Web of Science, and PTSDpubs for published literature up to November 2021 for any studies that examined the treatment of PTSD in adults who were vulnerably housed. Websites of relevant organizations and other grey literature sources were searched to supplement the electronic database search. The characteristics and effect of the interventions were analyzed. We also explored how the interventions were delivered and the elements of trauma-informed care that were described.

Results 28 studies were included. We identified four types of interventions: (1) trauma focused psychotherapies; (2) non-trauma psychotherapies; (3) housing interventions; and (4) pharmacotherapies. The trauma-informed interventions were small case series and the non-trauma focused therapies included four randomized controlled trials, were generally ineffective. Of the ten studies which described trauma-informed care the most commonly named elements were physical and emotional safety, the experience of feeling heard and understood, and flexibility of choice. The literature also commented on the difficulty of providing care to this population including lack of private space to deliver therapy; the co-occurrence of substance use; and barriers to follow-up including limited length of stay in different shelters and high staff turnover.

Conclusions This scoping review identified a lack of high-quality trials to address PTSD in the vulnerably housed. There is a need to conduct well designed trials that take into account the unique setting of this population and which describe those elements of trauma-informed care that are most important and necessary.

Protocol registration: Open Science Framework: https://osf.io/mpjgn

Keywords: trauma-informed care, post-traumatic stress disorder, homelessness

Strengths and limitations of this study

- First review of how trauma-informed care is being operationalized in the treatment of PTSD for the vulnerably housed.
- Largely homogenous populations (primarily women and US Veterans) included in studies, may not be representative of broader population.
- Often no mention of ethnic or cultural factors to consider when providing treatment.
- Many of the studies available were of low methodological quality.

Background

Individuals who are vulnerably housed have higher mortality and morbidity rates compared to the general population.[1,2] A common vulnerability factor for many disorders is the experience of trauma. It is estimated that as many as 91% of individuals who are homeless have experienced at least one traumatic event[3] and up to 99% have experienced childhood trauma.[4,5] A recent qualitative study

examining the pathways of men who become homeless long-term in Ontario, found that all of them had experienced complex childhood traumas.[6]

One consequence of exposure to trauma is either post-traumatic stress disorder (PTSD) or complex PTSD (cPTSD). PTSD results in re-experiencing the event, avoidance of reminders of the event, and persistent hypervigilance and awareness of threat. cPTSD results from prolonged threatening events which the individual cannot escape from (such as childhood abuse) and, in addition to PTSD symptoms, results in problems with affect regulation, negative beliefs about oneself, and difficulty in sustaining relationships.[7] Diagnosed PTSD rates in individuals who are homeless are significantly higher than the Canadian population, ranging between 21% and 53%[8–11] which may still be an underestimate of the actual prevalence.

Health care poses a unique and difficult challenge in the vulnerably housed, and a history of trauma, often perpetrated by people in caring roles such as parents or other family, makes accepting and engaging in treatment difficult.[6,12] Being vulnerably housed also exposes people to further traumas and re-victimization. [5,13,14] Further, PTSD is often poorly recognized as many vulnerably housed people with PTSD self-medicate with alcohol or other substances. There are also difficulties with accessing appropriate health care because of poverty and organizational barriers within health care providers.[15] These issues result in an underserved population with complex health needs that traditional mental health care is poorly equipped to serve.[10,16,17] Therefore, providing health care services to the vulnerably housed requires a degree of flexibility in terms of how services are provided, who provides them, when, and where. The approach recommended in clinical guidelines is trauma-informed care.[18–20]

The Substance Abuse and Mental Health Services Administration (SAMHSA) has defined trauma-informed care as a program, organization, or system that realizes the widespread impact of trauma and understands potential paths for healing; recognizes the signs and symptoms of trauma in staff, clients, and others involved with the system; and responds by fully integrating knowledge about trauma into policies, procedures, practices, and settings.[21] In 2010, Hopper described the four core principles of trauma-informed care in homeless services as trauma awareness, safety, choice and empowerment and a strengths based approach. The National Centre on Family Homelessness outlined several reasons why programs need to be trauma-informed,[22] including that trauma can impact how people access services, including viewing people and services as unsafe; recognition that people adapt to trauma to keep themselves safe including abusing substances, becoming aggressive, or withdrawing; and, programs and services cannot be “one size fits all”.

None of the five major Clinical Practice Guidelines for the treatment of PTSD[23] address the treatment of homeless people apart from the National Institute for Health and Care Excellence (NICE) guidance which states, “that methods of access to services take into account the needs of specific populations of people with PTSD, ...including people who are homeless”. It doesn’t describe what these methods of access may be. A recent clinical practice guideline for individuals who are homeless and vulnerably housed does not include treatment for PTSD although it does recommend trauma-informed care without defining what this is.[20]

People who are vulnerably housed are unique amongst those who have PTSD because of the very high rates of exposure to trauma; the frequent use of substances to self-medicate symptoms; high rates of physical and mental comorbidities; the difficulty of forming caring relationships; and the difficulty of

engaging with traditional health services often due to poverty and systemic barriers. We conducted this scoping review to explore the literature on what treatments have been used in this population and how trauma-informed care has been used to deliver these treatments.

Objectives and rationale

This scoping review aims to provide an overview of the literature on the treatment of PTSD and cPTSD in individuals who are vulnerably housed, how these treatments have been delivered and, if trauma-informed care was used, how that was operationalized.

The specific research questions guiding this scoping review are:

1. What interventions are described in the literature for the treatment of PTSD and cPTSD in individuals who are vulnerably housed?
2. Are there any interventions for treatment of PTSD and cPTSD in the vulnerably housed which are described as trauma-informed, and how is this operationalized?

Methods

We conducted a scoping review following the methodological framework proposed by Arksey and O'Malley [24] in addition to the methods manual published by the Joanna Briggs Institute's Methodology for Scoping Reviews.[25] Our review also complies with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.[26] The protocol is registered with the Open Science Framework (https://osf.io/mpjgn).[27]

Information sources and literature search

A health librarian (AH) conducted electronic database searches in MEDLINE, Embase, PsycINFO (via Ovid), CINAHL (via EBSCO), The Cochrane Library (via Wiley), Web of Science and PTSDpubs (via Proquest) from inception until March 2020, and updated in November 2021. The search was peer reviewed following the Peer Review of Electronic Search Strategies (PRESS) guidelines.[28] The full search strategy is available in an additional file (Appendix 1). No limits to language or publication date were applied. A thorough targeted search of the grey literature was conducted to identify any non-indexed studies including unpublished trial data, dissertations, theses, and conference proceedings. The Canadian Agency for Drugs and Technologies in Health (CADTH) Grey Matters Checklist was used to structure our grey literature search as well as identify key websites (i.e., organizations that focus on homelessness). We also hand-searched the reference list of identified reports for additional relevant studies that were not captured in the initial search.

Study selection: inclusion criteria

We included published and unpublished primary research studies reporting any quantitative, qualitative, mixed- or multi-methods research which includes comparative and non-comparative methods evaluating an intervention that looks to treat PTSD in adults (18 years of age or older) who are vulnerably housed. For the purposes of this review, vulnerably housed populations are defined as those who are unsheltered, emergency sheltered, provisionally accommodated, and/or at risk of homelessness.[29] Study designs include randomized controlled trials (RCTs), cluster RCTs, quasi-experimental studies, cohort studies, cross-sectional/survey studies, case studies and controlled before and after studies. We excluded reviews, commentaries, and editorials.

Study selection: Screening process

The citations from our comprehensive search strategy were uploaded into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia. Available at www.covidence.org). The screening process included phase I (titles and abstracts) and phase II (full texts) to identify relevant studies. In both phases, titles were screened by two independent reviewers (AB, KC, MK) following the eligibility criteria previously outlined. Prior to each stage of screening, all reviewers ran pilot screening on a random sample of 25 titles and abstracts and 10 full-text studies to identify and address any inconsistencies in applying the inclusion and exclusion criteria. Disagreements between reviewers were resolved by discussion and consultation of a third party (SH) if a consensus could not be reached.

Data abstraction and charting

All included full-text studies were reviewed and abstracted by a single reviewer (AB) using a pilot-tested data abstraction form in Excel. Data that was abstracted included study characteristics, study design, population characteristics, details about the intervention and the trauma-informed approach, and any key findings. A secondary reviewer (KC, MK) verified the abstracted data and any discrepancies between reviewers were resolved through discussion.

The charting process included organizing and interpreting data by sifting, categorizing, and sorting material according to key issues and themes.[24] We charted the data based on intervention type (e.g., trauma focused psychotherapies, non-trauma psychotherapies, housing interventions, and pharmacotherapy).

We assessed evidence level by the approach outlined by Burns, Rohrich and Chung (2012) in The Levels of Evidence and their role in Evidence-Based Medicine (see Burns et al. 2012, p.10, Table 4 for Levels of Evidence for Therapeutic Studies).[30] We decided if the treatment was delivered by a trauma-informed approach by examining the components as outlined by Hooper et al (2010).[18] Studies were marked as “Yes” if they explicitly stated using a trauma-informed approach, while those that used components of a trauma-informed approach, but did not explicitly state a trauma-informed approach were marked as "partial."

Patient Involvement

Persons with lived experience were included in the design stage of this project, but were not directly involved with the scoping review.

Results

The electronic search resulted in a total of 2,564 citations. We identified 1 study in our grey literature search. After de-duplication, 2,522 unique titles and abstracts were screened at phase I, of which 2,367 records were excluded, and 154full-text articles were moved to phase II screening. A total of 28 articles met our inclusion criteria. The details of our selection process are illustrated in our PRISMA flow-chart in Figure 1.

Most studies were conducted in the USA, apart from three studies which were from Canada, Spain, and the Netherlands published between the years 1999 and 2020. We identified 7 randomized-controlled trials (RCT), 1 quasi-RCT, 10 pre-post observational studies, 1 retrospective chart review, 4 case studies, 4 pilot trials, and 1 qualitative and quantitative analysis of trial participant focus groups. A description of included studies is provided in Table 1.

Table 1 Summary of study characteristics

Author (year)	Country	Study design	Sample size	Mean age (SD)	Population	PTSD measurement	Intervention	Intervention length and dose	Was it a trauma-informed approach?	Evi lev
Abramovich et al. (2020)	Canada	Case study	1	23	Trans-woman, recent refugee claimant residing in emergency shelter	Physician made a diagnosis	Pharmacological, psychotherapy	Weekly psychotherapy, daily mirtazapine and prazosin taken at bedtime	Partial, the care team integrated a social determinants of health–based approach into her treatment plan	4
Bani-Fatemi et al., (2020)	Canada	Pre-post observational study	70	21.47 (3.79)	Homeless female youth (16-24 years old); Gender-based violence	UCLA-PTSD Reaction Index – DSM V.	Psychoeducation program	Weekly trauma-informed psychoeducation groups over 16 weeks	Yes	2B
Blitz (2006)	USA	Pre-post observational study [Dissertation]	23	28.3	Black and Latina Women; residing in domestic violence shelter in a large urban centre (NYC)	Self-report using the Davidson Trauma Scale	Psychoeducation, individual therapy sessions, psychiatric consultation, case management meetings	Length of shelter stay (study measured up to 90 days)	Partial, used SELF model	4
Brewer (2019)	USA	Pre-post observational study	48	37.5	Parents residing in a shelter (Men (25%), Women (75%)), primarily Hispanic/Latinx (62.5%).	Provisional diagnosis for PTSD, as self-reported by the PCL-5 questionnaire. Participants were considered to qualify for a provisional diagnosis of PTSD if they had a total score exceeding 33 points	Psychoeducation, process oriented, and experiential exercises	9-week intervention. Each group met once per week and each meeting lasted approximately one and a half hours.	Yes	2B
Burns et al. (2010)	USA	RCT	206	40.1 (7.1)	Individuals receiving care at community-based clinic, experiencing homelessness, cocaine dependence, primarily Men (72.3%)	Structured Clinical Interview for the DSM-IV (SCID) (clinician) and Posttraumatic Diagnostic Scale (self-report)	Contingency management for cocaine dependence (behavioural treatment for substance use disorders)	Counselling as needed and weekly goal setting in CM+	No	2B

Carpenter (1999)	USA	Quasi-RCT [Dissertation]	10	35	Battered Women residing in a shelter	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient with the Impact of Events Scale	Eye Movement Desensitization and Reprocessing	Following an initial two-hour session, subjects received up to seven one-hour sessions on a twice a week basis	No	1B
de Vicente et al. (2004)	Spain	Single arm pilot study	8	47.8 (6.9)	Adults accessing a day centre for homeless in a large urban centre, enrolled Women (50%)	Two participants were diagnosed with posttraumatic stress disorder by using the Composite International Diagnostic Interview, PTSD was diagnosed using "Section K" of the Composite International Diagnostic Interview (CIDI) 2.1	Written and verbal emotional disclosure	Four 1-hour sessions over 2 weeks	No	2B
Desai et al. (2008)	USA	Pre-post observational study	643	43.3 (8.1)	Female veterans who were homeless or at high risk of becoming homeless; Not receiving VA services >6 weeks	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient using PTSD Checklist scores	Cognitive behavioural therapy	The Phase I intervention lasted if women remained residents of the shelter. The Phase II intervention lasted for six months. After the baseline interview, follow-up interviews were obtained every three months over the course of one year	Partial, used Seeking Safety model	4
Feingold et al. (2018)	USA	Retrospective chart review	81	39.3 (10.98)	Men (53%), Women (48%), Other (1%) who were identified in St. Louis Jail Diversion Program records	Trauma exposure and posttraumatic distress were evaluated by a clinical interview conducted by trauma therapists and supplemented by patient self report measures using the Diagnostic and Statistical Manual for Mental Disorders Fourth Edition (DSM–IV) and PTSD diagnostic Criterion A event	Cognitive processing therapy, cognitive behavioural therapy, motivational interviewing	Cognitive Processing Therapy was provided in 12 sessions, Cognitive Behavioural Therapy was provided in 8 sessions, Motivational Interviewing is brief in 3-5 sessions	Yes	2B
Garland et al. (2016)	USA	RCT	180	MORE: 37.7 (10.4) CBT:	Men with concurrent disorders in a modified	Diagnostic interviews were conducted by a psychiatrist and/or clinical social worker with training in making	Cognitive-behavioural therapy	10 session group interventions at 2 hours each	No	1B

				36.5 (11.2) TAU: 38.7 (9.8)	therapeutic community program.	addiction and psychiatric disorder diagnoses Semi structured psychiatric interview similar to the Mini-International Neuropsychiatric Interview (MINI) and the PCL-C				
Gorzynski (2018)	USA	Pre-post observational study [Dissertation]	63	30.7 (7.6)	Women who were homeless but residing in a non-profit inpatient substance use rehab centre.	Self-report, participants were administered the Trauma Symptom Inventory -2 (TSI-2) during the first treatment session	Cognitive-behavioural	8 sessions for 2 hours each over 4 weeks (1 month, with 2 sessions per week)	Partial, used Seeking Safety model	3B
Harpaz-Rotem et al. (2011)	USA	Pre-post observational study	451	No RT: 43.5 (8.9) RT: 43.9 (6.7)	Female veterans who were homeless or at high risk of becoming homeless; Not receiving VA services >6 weeks	Self-report using the posttraumatic Stress Disorder (PTSD) Symptom Checklist (PCL) was used to assess PTSD symptoms	Residential treatment	Minimum of 30 days residence in the program	No	3B
Harris et al. (2019)	USA	Pre-post observational study	421	54 (7.52)	Men (71%), Women (28.5%), and Other (0.5%) who were homeless and moved into Permanent Supportive Housing in a large urban centre (LA)	Self-report using the 4-item Primary Care PTSD Screen	Supportive Housing	Not reported	No	3B
Held et al. (2015)	USA	Pilot study	47	51.3 (8.4)	Male veterans who were homeless and living in transitional housing	Self-report, PTSD Checklist–Specific Stressor Version at baseline	Self-compassion therapy	4 weeks	No	2B
Helfrich et al. (2011)	USA	Pre-post observational study	72	Mean: 46.5	Men (55.6%) and Women (44.4%) living in either emergency housing or single	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the IES-R	Life skills intervention	Not reported	No	2B

					room occupancy program.	(Impact of Event Scale Revised)				
Johnson et al. (2006)	USA	Pilot study	18	32 (7)	Women residing in one of 2 eligible shelters and experience of domestic abuse in the month prior	One-week-symptom severity and PTSD diagnostic criteria was assessed by shelter staff using the Clinician Administered PTSD Scale and the Beck Depression Inventory at first presentation	Cognitive behavioural therapy	Twice per week	Partial, used HOPE model	3B
Johnson et al. (2009)	USA	Case study	1	29	Woman with experience of IPV residing in a shelter	The patient first presented with significant IPV-related PTSD symptoms and no Axis I (American Psychiatric Association, 1994) comorbidity	Cognitive behavioural therapy	12 biweekly sessions over 7 weeks	Partial, used HOPE model	4
Johnson et al. (2011)	USA	RCT	70	32.55 (8)	Women residing in one of 2 eligible shelters and experience of domestic abuse in the month prior	Shelter staff used the Clinician Administered PTSD Scale (CAPS) at first presentation	Cognitive behavioural therapy	12 sessions, twice weekly that lasted approximately an 1-1.5 hours	Partial, used HOPE model	1B
Johnson et al. (2016)	USA	RCT	60	HOPE + SSS: 33.30 (10.48) SSS: 33.20 (10.39)	Women residing in one of 4 eligible shelters; and experience of IPV in past month	All assessments were conducted by trained and blinded doctoral students in psychology Clinician-Administered PTSD Scale (CAPS)	HOPE, a CBT and empowerment-based individual treatment	Participant received 10 sessions in shelter over 10 weeks and then up to 6 sessions post shelter for 3 months for a total of 16 sessions throughout the treatment period	No	1B
Johnson et al., (2020)	USA	RCT	172	35.13 (9.12)	Women residing in an eligible shelter; and experience of IPV in past month	Clinician-Administered PTSD Scale	HOPE, a CBT and empowerment-based individual treatment	16-session intervention during shelter and first 3-months post-shelter	Yes	1B
Kip et al. (2016)	USA	Pre-post observational study	117	43 (13.2)	Veterans who had been deployed to a major conflict zone, were homeless; primarily Men (92.1%)	A clinical interview and screening that included use of the 17-item Military PTSD Checklist (PCL-M) and PTSD subscale of the 125- item Psychiatric Diagnostic	Accelerated Resolution Therapy	1-hour session per week for one month	No	2B

						Screening Questionnaire (PDSQ)				
Lako et al. (2018)	Netherlands	RCT	136	CTI: 34.24 (8.52) TAU: 33.58 (8.08)	Women residing at a participating shelter ≥6 weeks with an experience of IPV or honor-related violence	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient with the Impact of Events Scale	Critical time intervention (CTI)	The duration of each phase was predetermined at 3 months (thus 9 months total for CTI).	No	1B
Lester et al. (2007)	USA	RCT	206	CM+: 40.54 (7.35) CM: 40.02 (7.01)	Individuals receiving care at community-based clinic, experiencing homelessness or at imminent risk of homelessness, and cocaine use disorders; primarily male (CM+: 74% male; CM: 75% male)	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the SCID and PDS	Behavioral day treatment, abstinence contingent housing, and abstinence-contingent vocational training	Phase I (months 1–2), Phase II (months 3–6), Phase III (months 7–12), and Phase IV (months 13–18)	No	1B
Liu-Barbaro et al. (2015)	USA	Case study	1	63	Man residing at shelter for 5 months	The patient met DSM-IV criteria for PTSD and major depressive disorder	Pharmacological	He was started on treatment with sertraline 50 mg, which was titrated to 150 mg over 1 month, and prazosin 1 mg titrated to 4 mg over 2.5 months.	No	4
Morrison et al. (2007)	USA	Case study	1	49	Woman residing in shelter	Not reported	Supportive and pharmacological therapy	Not reported	No	3B
Schueller et al. (2019)	USA	Pilot study	35	19.06 (0.85)	Young adults, aged 18-24, (Men (31%), Women (65%), Transgender (3%)) who were homeless and spent at least 4 of the previous 7 nights in a shelter.	Current symptoms of PTSD were assessed using the 20-item PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-5 (PCL-5) at baseline and 1 month post intervention	Mobile phone-based therapy (in line with cognitive behavioural therapy principles)	Three 30-min phone sessions over 1 month	No	3B

Van Voorhees et al. (2019)	USA	Qualitative and quantitative study of focus groups	22	55.2	Convenience sample of Veterans (sample 100% Men) who were homeless and receiving VA Primary Care services	PTSD was self-reported using a modified version of the Basic Shelter Inventory	Peer mentors	Four focus groups of 5-8 participants over 90 minutes. Participants had taken part in one of two RCT's of peer mentoring to deliver primary care.	No	3B
Wong (2019)	USA	Pre-post observational study	5	Unclear	Men residing for at least 90 days in a men's shelter for people who use substances working towards sobriety	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the SPRINT scale	Flash Technique	Treatment consisted of eight 50-minute sessions, 1 session per week (thus lasting 8 weeks total)	Yes	2B

Research question 1: What interventions are described in the literature for the treatment of PTSD and cPTSD in individuals who are vulnerably housed?

Trauma focused psychotherapies

We identified four studies that used an intervention where participants were asked to recall details of the traumatic events. One non-randomized study evaluated the effectiveness of using eye movement desensitization and reprocessing (EMDR) in 10 women living in a battered women's shelter in Michigan.[31] Both the five women who received EMDR and the five women who received only the standard shelter program experienced significant reductions in PTSD symptoms although the reduction was greater in the EMDR group. One case series of five men attending a trauma group in a Californian Homeless Shelter study used the Flash Technique [32] which is part of the preparatory phase of EMDR treatment. Another observational study evaluated the feasibility of using accelerated resolution therapy [33] in a cohort of 23 homeless veterans compared to 94 community living veterans in Tampa, Florida. Accelerated resolution therapy involves brief recall of traumatic events, imagery rescripting and some elements of EMDR. About half of individuals who were in the homeless group completed treatment compared to 80% of community veterans. The reasons for non-completion in individuals who were homeless were moving away from the shelter, conflict with work, and other life circumstances. The authors comment that therapies for individuals who are homeless need to be brief and need to take into account a range of comorbidities and significant life challenges. They also commented on the difficulties of finding a private quiet setting which isn't always available in a homeless shelter. De Vicente et al[34] described a case series of 8 homeless people, two of whom were diagnosed with PTSD, attending a day centre in Madrid, Spain for individuals who are homeless. They received an emotional disclosure protocol where participants were asked to write or speak about their thoughts and feelings associated with their trauma.

Non-trauma focused psychotherapies

Johnson et al. evaluated a cognitive-behavioral therapy (CBT) and empowerment-based individual treatment called Health to Overcome PTSD through Empowerment (HOPE). They reported a case study, pilot study, and two RCTs in women with PTSD or subthreshold PTSD from "battered women's shelters" comparing HOPE with "standard shelter treatment".[35–38] The HOPE therapy focused on addressing PTSD resulting from intimate partner violence (IPV), while using many traditional components of CBT for PTSD (for example cognitive-restructuring, skill building) with a focus on stabilization, safety and empowerment. In the first RCT of 70 people, they found no difference in PTSD outcomes with one in four participants attending all 12 HOPE sessions and about two-thirds attending five or more sessions. Participants were excluded if they were psychotic, suicidal, had been diagnosed with bipolar disorder or had any change in psychotropic medication in the previous month. In the second RCT of 60 women in shelters, the treatment was continued after the women had left the shelter but again did not find a significant difference in PTSD outcomes. Johnson et al. also conducted a third RCT, an expansion of prior RCTs, comparing the HOPE intervention to an adapted version of present-centered therapy (PCT+). They evaluated the efficacy relative to a time- and attention-matched control condition over a 12-month period 12 months. Results of multivariate models found that both HOPE and PCT+ were associated with significant and large reductions in IPV related PTSD symptoms. Further, both treatments resulted in significant small to medium effects on IPV, depression, empowerment, posttraumatic cognitions, and health-related quality of life. The study authors found that both HOPE and PCT+ are viable and efficacious treatments of IPV–related PTSD in women residing in shelters[39].

Two observational studies aimed to evaluate the effectiveness of a CBT based group therapy, Seeking Safety in homeless women.[40,41] Seeking Safety is a manualized CBT intervention consisting of 25 individual modules that address issues of safe behaviors and relationships, life skills, and relapse prevention. In the 2008 observational cohort study, 91 female US veterans who were vulnerably housed were offered Seeking Safety and were compared to a historical cohort of 359 women who did not receive Seeking Safety. It is unclear how many of the women had PTSD but there was a significant decrease in PTSD symptoms over the whole group although the differences were small. The Seeking Safety group significantly increased their drug use. In the 2017 pretest post-test interventional study, 63 homeless women in an in-patient residential setting who had been exposed to trauma and had substance use disorders were offered an abbreviated version of Seeking Safety. The abbreviated version was developed in response to criticism that the full version was too long, required high levels of participant commitment, and was unsuitable for "transient" populations. The authors found that after eight two-hour sessions over four weeks there was a significant improvement in perceived self-efficacy in the two-thirds of the sample who completed a minimum of six out of eight sessions. The Veterans Affairs Clinical Practice Guidelines concludes that there is insufficient evidence to recommend for or against Seeking Safety for treatment of PTSD in the general population.

Feingold [42] reported an observational cohort study of cognitive processing therapy, CBT and motivational interviewing in adults within a US jail diversion program. About a third of their population of 81 participants were vulnerably housed and 62% were diagnosed with PTSD. The main finding was that about half of the sample did not complete their treatment. Increased completion rates were associated with emergency therapy sessions and the authors comment on the need for flexibility in delivering care to this population. In those who did complete their treatment there was a significant decrease in PTSD symptoms.

Schueller [43] reported a single group pilot study evaluating the feasibility and acceptability of a mobile phone-based therapy that used an app designed to help provide coping skills to 35 young adults (18-24 years) recruited from homeless shelters in Chicago. Participants received a mobile phone, a data plan, the app and one month of support from a coach consisting of up to three brief sessions. Just over half of the participants completed all three coaching sessions but there were no significant changes in clinical outcomes.

Contingency management

In one unblinded RCT, 187 homeless people from Alabama, dependent on cocaine, were randomized to contingency management or contingency management plus. At the start of the study 21 participants had a diagnosis of PTSD. Housing was dependent on negative urine screens for cocaine. There did not appear to be any difference in outcomes between the two groups.[44,45]

Educational interventions

One RCT examined the effectiveness of a critical time intervention for abused women who were transitioning from women's shelters to community living.[46] Critical time intervention is a time-limited, strengths-based intervention designed to support vulnerable people during transitions in their lives. This study of 136 Dutch women found a significant decrease in PTSD symptoms after nine months which was mainly due to a reduction in symptoms in non-Dutch speaking women. Another pilot study evaluated the effect of self-compassion therapy compared to stress inoculation on trauma-related guilt and PTSD severity.[47] The authors randomized 47 US veterans living in transitional housing to receive workbooks

on the different therapies. Symptoms of PTSD did not significantly differ between the two groups after treatment. Twenty of the participants did not complete the workbooks. One qualitative study of 22 homeless US veterans hypothesised that feeling disconnected was associated with poor outcomes in those with PTSD.[48] A pretest and post-test study of 8 adults looked to evaluate the treatment effects of Building Bridges, a group-based psychotherapy adapted for parents living in homeless shelters in San Francisco.[49] Building Bridges consisted of nine 90 minute groups that included psychoeducation, mindfulness and experiential exercises. There was no significant impact on PTSD symptoms. The authors comment on the difficulty of providing groups in a shelter setting because of staff turnover and restrictions, such as length of stay, at different sites. Another pretest post-test study examined the impact of a life skills group and individual program on 72 individuals who had been recently homeless living in emergency housing.[50] Eight out of ten participants reported a history of abuse. Symptoms of PTSD significantly decreased after the intervention. The life skills intervention consisted of one or more modules which focused on food management, money management, room and self-care management and safe community participation. A longitudinal observational study evaluated the changes in quality of life (primary outcome), psychological distress, traumatic symptoms, substance use, resilience, victimization, and sense of mastery (secondary outcomes) in young women experiencing gender-based violence and homelessness in Toronto, Canada after their enrollment in the Peer Education and Connection through Empowerment (PEACE) program. The PEACE program is a community-based, trauma-informed, group psychoeducation intervention launched in 2017, for female identified youth aged 16 to 24 experiencing gender-based violence and homelessness. The program aims to empower and support survivors of gender-based violence, offering weekly trauma-informed psychoeducation groups over 16 weeks to promote health and well-being. Overall, the study found that after 12 months, quality of life increased significantly among participants ($p = 0.009$), and the 12-month victimization score was significantly decreased relative to baseline ($p = 0.05$). Changes in other outcomes were not statistically significant. The study authors concluded that a brief, community-based, trauma-informed, group psychoeducation intervention may be helpful in improving the quality of life and reducing experiences of victimization among female identified youth[51].

Housing interventions

We identified three studies that used housing and shelter as a way to provide therapy.[52–54] One study used a shelter as a restorative milieu that integrated trauma recovery and social justice empowerment for Black and Latino women in New York.[52] This pretest post-test descriptive and qualitative study of about 20 women found a reduction in PTSD symptoms over time and an appreciation by the residents that the shelter milieu felt safe and nurturing. Another study focused on providing supportive housing to 421 homeless adults in Los Angeles.[54] This descriptive pretest and post-test study found that about half the sample had probable PTSD at baseline which reduced to 40% at three, six and 12 months. A cohort study of homeless US female veterans compared 234 who received at least 30 days of residential treatment with 217 who received less than 30 days. The study was able to follow up about half the participants after one year. The authors found a small but significant improvement in PTSD symptoms in those who received residential treatment.[53]

Pharmacotherapy

There were three single person case studies describing successful pharmacological treatments.[55–57] In one study, a 23-year-old transgender refugee woman in an emergency shelter in Canada was prescribed mirtazapine 60mg for PTSD and insomnia, and prazosin 6mg for nightmares.[55] Liu-Barbaro and Stein[56] describe treating a 63-year-old Ethiopian man living in a homeless shelter with a major depressive disorder and PTSD with dissociative symptoms. He was treated successfully with sertraline 150mg and prazosin 4mg. The authors note that this patient had suffered for years before being diagnosed and treated.[56] Finally, the last study reported a "composite case" of a 49-year-old woman with PTSD prescribed sertraline 150mg and supportive therapy.[57]

Research question 2: Are there any interventions for treatment of PTSD and cPTSD in the vulnerably housed which are described as trauma-informed, and how is this operationalized?

We identified four studies that explicitly stated using a trauma-informed approach to deliver treatment.[32,42,49,51]wo studies did not clearly describe how they operationalized their trauma-informed approach.[32,42] One study investigating the Building Bridges intervention described using a trauma-informed approach based on the work by Guarino et al.[58] As a result Building Bridges is based on understanding how trauma affects parents' and children's cognitions, emotions and behaviors. The authors stressed that emotional safety, and the desire to feel heard, protected, comforted, and understood is an important aspect in treating populations who have experienced trauma. Bani-Fatemi et al. conducted a longitudinal observational study of a psychoeducation group intervention, Peer Education and Connection through Empowerment (PEACE), which they described as trauma-informed. The PEACE program is peer led and community-based and was designed using a participatory action framework to return power to those in the program and a focus on participant safety in the group[51].

There were 7 studies that did not explicitly state using a trauma-informed approach; however they did describe components of their treatment that align with the concepts of a trauma-informed care.[35–38,40,52,55,59] The HOPE intervention focused on the impact of present trauma of interpersonal violence and did not focus on trauma from the past. The research group investigating HOPE used Herman's[60] multistage model of recovery which addresses the treatment needs of battered women and incorporates three stages of recovery: (a) establishing safety, self-care, and protection, (b) remembrance and mourning, and (c) reconnection. The authors also note the importance of flexibility and being available when people are ready to engage.[61] Two studies used Seeking Safety[40,59] which they describe as based on five central ideas: "1) Safety as the priority of this first stage treatment; 2) integrated treatment of PTSD and substance abuse; 3) a focus on ideals; 4) four content areas: cognitive, behavioral, interpersonal, and case management; and 5) attention to therapeutic processes." The goals of the treatment are to create an empathetic approach where the clients "own" the trauma, to provide education, to validate the connection between trauma and substance abuse, and to offer safe coping skills to manage the symptoms, impulses, and emotions that often come with these co-occurring disorders. One case study integrated a social determinants of health based approach into the treatment plan.[55]

Discussion

Despite the high prevalence of PTSD in the vulnerably housed there is little evidence of what is effective treatment. Figure 2 outlines how the 28 studies identified map onto the four components of trauma-informed care. The four trauma-informed interventions were small case series, and the non-trauma focused therapies were generally ineffective which is consistent with the broader literature. A novel intervention in this population is using housing as an intervention but the impact on PTSD symptoms

was relatively modest and the strength of evidence low. A systematic review of permanent supportive housing for homeless individuals found no impact on psychiatric symptoms although there was greater housing stability compared to usual care.[62] What is notable

We found three studies that explicitly stated using a trauma-informed approach, while seven described a method that incorporated all or some components of a trauma-informed care approach. Although guidelines and organizations recognize the need for a trauma-informed approach,[20,21,63,64] it is unclear how this translates into action or what the most important components are. This review highlights the need to operationalize trauma-informed care and to identify the necessary and most important components in the vulnerably housed. Another area that is unexplored is whether what people with lived experience consider to be trauma-informed care is different to what providers would consider. The impact of an intervention that is trauma-informed is most likely to be seen in increased rates of engagement and completion of treatment.

Guidelines on the treatment of PTSD recommend trauma focused therapies as the most effective interventions. This review clearly identifies a research gap in the application of trauma focused therapies in those who are homeless. The strengths of the studies included in this review demonstrate that it is possible to deliver interventions in this population. However, an important limitation is the difficulty of keeping people in treatment with most studies reporting low engagement with treatment or low follow-up rates. Few studies described what proportion of people agreed to participate in the treatments but the small numbers in most studies suggest that engagement in treatment is difficult. Further the literature in this area is primarily focused on women and US Veterans. Many studies did not mention any ethnic or cultural factors to consider when providing treatment for the vulnerably housed. Also there is a lack of qualitative and experiential data to illustrate any other meaningful changes that may have occurred during treatment. Lastly, there is low methodological quality and reporting of studies. Although a formal quality assessment was not performed, the levels of evidence were rated for each study and most studies were rated lower quality with small sample sizes or low rates of follow-up. Any conclusions made from these studies should be interpreted with caution.

Conclusion

There is currently little evidence on how trauma-informed care for PTSD in the vulnerably housed should be delivered and whether it is effective. Poor quality trials make interpretation of acceptability, feasibility and effectiveness difficult. Evaluation of interventions should be expanded to include not only symptom improvement, but experiential data informed by the engagement of patients as partners. Measures of symptom severity alone often do not provide a complete picture of the patient experience, excluding factors that may be important such as increased understanding of their illness, skill building, coping and wellbeing.

This review has also highlighted the need for pragmatic trial designs instead of “one-size fits all” interventions and delivery approaches. The development of a trauma-informed care strategy should be adaptable to multiple cultural or geographic situations to ensure that healthcare providers are able to deliver meaningful, evidence-based care and no individuals are “left behind”. Any guidance should include recommendations for implementation or adaptation to ensure fidelity for comparison of effectiveness while allowing for flexibility in delivery.

Managing PTSD and complex PTSD can be challenging for many service providers in a population where appropriate treatment approaches are poorly understood, under-researched and lack a patient-oriented

perspective. It is unclear in this population if treatments for complex PTSD need to be different from PTSD. This scoping review has identified several gaps in providing trauma-informed care to a vulnerable population. There is a need to conduct well-designed trials of trauma focused therapies with mixed-methods approaches, focusing on trauma-informed care principles to improve treatments for the vulnerably housed experiencing or at high risk of developing mental health issues. Research needs to clarify which components of trauma informed care are the most important and how to operationalize these.

The main implications from this review for individuals working with this population are that there is no evidence that contradicts recommendations from existing guidelines that trauma focussed therapies are effective treatments for PTSD. Trauma focused treatments should be accessible to people who are homeless or vulnerably housed. The delivery of effective interventions should focus on trauma informed approaches with an emphasis on safety, choice, awareness of how trauma affects the acceptability of care and a strengths-based approach.

Contributors
This research was conceptualized by SH, while AB and NEE contributed to the study design. Search Strategy and searches were completed by AH. While title, abstract and full screenings, and data extraction were carried out by AB, KC, MK under guidance from SH. Manuscript was drafted by AB, NEE and SH. Critical review of manuscript was undertaken by all authors. All authors approved the final manuscript.

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Figure Legend

Trauma informed care (from Hopper) described in the scoping review (Outer Circle)

Types of intervention found in the scoping review (Middle Circle)

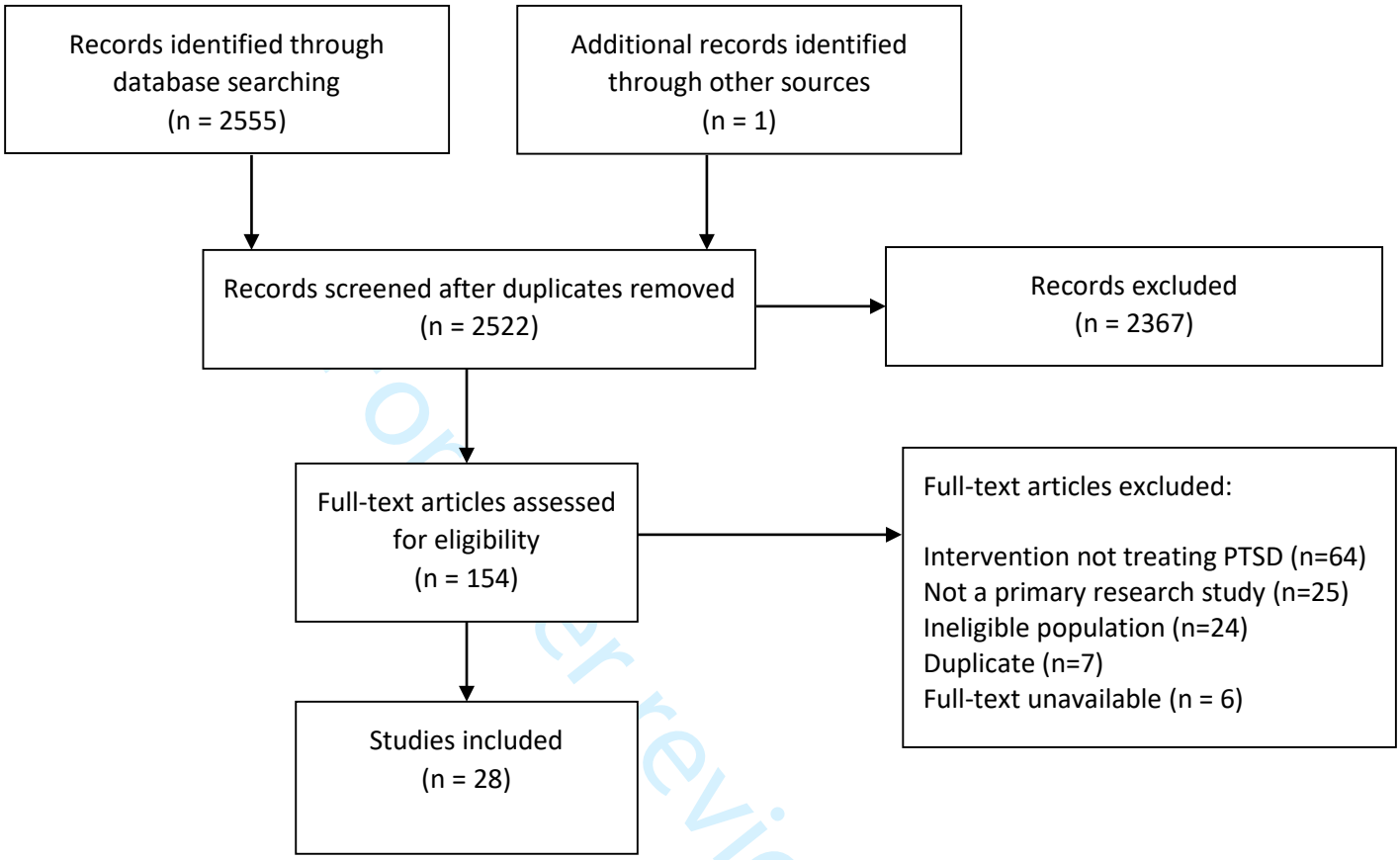

Figure 1 PRISMA flow-chart of included studies

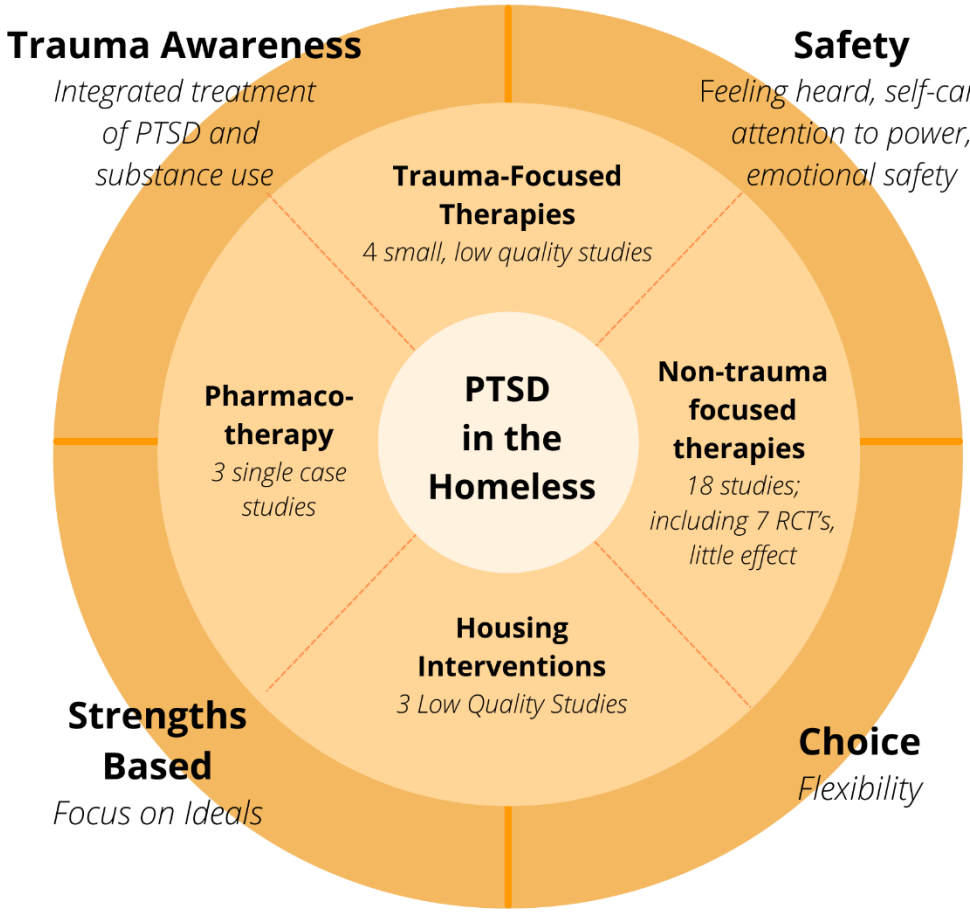

Figure 2. Summary of findings

Appendix 1 - Final literature search strategies

Limits: none

Searches run on March 26, 2020
Search update run on November 1, 2021

Databases:

- Medline (medall)
- Embase (emczd)
- APA PsycInfo (psyh)
- CINAHL
- Cochrane Library (via Wiley platform)
- WebOfScience
- PtsdPubs

Embase, Ovid MEDLINE(R), APA PsycInfo

Search history sorted by search number ascending

#	Searches	Results
1	exp Homeless Persons/	10564
2	homeless*.ti,ab,kf.	33339
3	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kf.	3254
4	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab,kf.	12953
5	housing outcome*.ti,ab,kf.	249
6	(vulnerabl* adj2 hous*).ti,ab,kf.	564
7	(no housing or no fixed address or squatter* or evict*).ti,ab,kf.	3651
8	or/1-7	52487
9	exp housing/	68128
10	housing.ti,ab,kf.	80001
11	or/9-10	117889
12	vulnerable populations/	23575
13	exp poverty/	97990
14	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab,kf.	1851735
15	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kf.	120846
16	or/12-15	2005185

17	and/11,16	17080
18	or/8,17	65715
19	"trauma and stressor related disorders"/	48773
20	exp stress disorders, traumatic/	94387
21	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab,kf.	203057
22	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab,kf.	115064
23	(acute stress disorder* or combat disorder* or war neuros*).ti,ab,kf.	2822
24	(trauma-informed or trauma-focus*).ti,ab,kf.	6927
25	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab,kf.	58728
26	or/19-25	281197
27	and/18,26	1582
28	27 use medall	473
29	exp homeless person/	10564
30	homeless*.ti,ab,kw.	33547
31	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kw.	3262
32	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab,kw.	12990
33	housing outcome*.ti,ab,kw.	249
34	(vulnerabl* adj2 hous*).ti,ab,kw.	578
35	(no housing or no fixed address or squatter* or evict*).ti,ab,kw.	3669
36	or/29-35	52686
37	housing/	49217
38	real estate/	231
39	housing.ti,ab,kw.	80421
40	or/37-39	103700
41	vulnerable population/	26323
42	poverty/	92527
43	exp lowest income group/	27543
44	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab,kw.	1853972
45	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kw.	120465
46	or/41-45	2010908
47	and/40,46	16486
48	or/36,47	65390
49	posttraumatic stress disorder/	122887
50	psychotrauma/	9075
51	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab,kw.	204775

52	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab,kw.	116228
53	(acute stress disorder* or combat disorder* or war neuros*).ti,ab,kw.	2936
54	(trauma-informed or trauma-focus*).ti,ab,kw.	6948
55	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab,kw.	59229
56	or/49-55	287064
57	and/48,56	1606
58	57 use emczd	679
59	exp homeless/	7407
60	homeless*.ti,ab.	33202
61	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab.	3245
62	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab.	12920
63	housing outcome*.ti,ab.	249
64	(vulnerabl* adj2 hous*).ti,ab.	562
65	(no housing or no fixed address or squatter* or evict*).ti,ab.	3638
66	or/59-65	50449
67	exp housing/	68128
68	exp living arrangements/	68050
69	housing.ti,ab.	79147
70	or/67-69	164338
71	at risk populations/	37373
72	poverty/	92527
73	runaway behavior/	1361
74	lower income level/	8653
75	disadvantaged/	17646
76	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab.	1849039
77	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab.	120201
78	or/71-77	2029780
79	and/70,78	23725
80	or/66,79	70172
81	"Stress and Trauma Related Disorders"/	13
82	exp Posttraumatic Stress Disorder/	122996
83	Acute Stress Disorder/	2410
84	Post-Traumatic Stress/	54050
85	combat experience/	2864
86	emotional trauma/	24247
87	traumatic neurosis/	334

88	stress reactions/	85294
89	trauma/	480688
90	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab.	201831
91	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab.	114265
92	(acute stress disorder* or combat disorder* or war neuros*).ti,ab.	2797
93	or/81-92	788522
94	exp "stress and trauma related disorders"/	33752
95	exp trauma/	3330169
96	or/94-95	3354276
97	exp intervention/	103258
98	and/96-97	4077
99	(trauma-informed or trauma-focus*).ti,ab.	6863
100	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab.	58567
101	or/98-100	64494
102	or/93,101	822408
103	and/80,102	2442
104	103 use psyh	712
105	or/28,58,104	1864
106	remove duplicates from 105	1209

CINAHL

#	Query	Results
S7	S5 AND S6	620
S6	(MH "Stress Disorders, Post-Traumatic+") OR TX (post-traumatic OR posttraumatic OR ptsd OR "traumatic disorder*") OR TX ((posttrauma* OR post-trauma*) N3 (stress* OR disorder* OR psych* OR symptom*)) OR TX ("acute stress disorder*" OR "combat disorder*" OR "war neuros*") OR TX (trauma-informed OR trauma-focus*) OR TX (trauma* N3 (care OR treatment* OR therap* OR intervention*))	57,274
S5	S1 OR S4	20,662
S4	S2 AND S3	5,267

S3	((MH "Poverty") OR (MH "Indigent Persons") OR (MH "Vulnerability")) OR TX (poor OR poverty OR vulnerabl*) OR TX (low N3 (income* or revenu*)) OR TX ((marginal OR precarious* OR disadvantag* OR "at risk") N3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?))	322,387
S2	(MH "Housing+") OR TX housing*	23,749
S1	((MH "Homelessness") OR (MH "Homeless Persons")) OR TX homeless* OR TX ((street* OR "no home" OR "no homes") N3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) OR TX ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) N3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)) OR TX ("housing outcome" OR "housing outcomes" OR "no housing" OR "no fixed address" OR squatter* OR evict*) OR TX vulnerabl* N2 hous*	16,888

Web of Science:

Set	**Results**	**Save History / Create AlertOpen Saved History**
# 7	**655**	#6 AND #5 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 6	**112,391**	**TOPIC:** (post-traumatic OR posttraumatic OR ptsd OR "traumatic disorder*") *OR* **TOPIC:** ((posttrauma* OR post-trauma*) NEAR/3 (stress* OR disorder* OR psych* OR symptom*)) *OR* **TOPIC:** ("acute stress disorder*" OR "combat disorder*" OR "war neuros*") *OR* **TOPIC:** (trauma-informed OR trauma-

		focus*) *OR* **TOPIC:** (trauma* NEAR/3 (care OR treatment* OR therap* OR intervention*)) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 5	**45,160**	#4 OR #1 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 4	**13,545**	#3 AND #2 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 3	**1,147,594**	**TOPIC:** (poor OR poverty OR vulnerabl*) *OR* **TOPIC:** (low NEAR/3 (income*)) *OR* **TOPIC:** ((marginal OR precarious* OR disadvantag* OR "at risk") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 2	**100,783**	**TOPIC:** (housing*) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 1	**33,943**	**TOPIC:** (homeless* OR "housing outcome" OR "housing outcomes" OR "no housing" OR "no fixed address" OR squatter* OR evict*) *OR* **TOPIC:** ((street* OR "no home" OR "no homes") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) *OR* **TOPIC:** ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)) *OR* **TOPIC:** (vulnerabl* NEAR/2 hous*) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

Cochrane Library (61 references from CENTRAL only) - no results in Cochrane Database of Systematic Reviews, although the entire library was searched.

Search Name:

Date Run: 26/03/2020 18:04:44

Comment:

ID Search Hits

#1 MeSH descriptor: [Homeless Persons] explode all trees 332

#2 (homeless* OR "no housing" OR "no fixed address" OR squatter* OR evict* OR "housing outcome*"):ti,ab,kw OR (vulnerabl* NEAR/2 hous*):ti,ab,kw OR ((street* OR "no home" OR "no homes") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)):ti,ab,kw OR ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)):ti,ab,kw (Word variations have been searched) 1258

#3 #1 OR #2 1258

#4 MeSH descriptor: [Housing] explode all trees 393

#5 (housing*):ti,ab,kw 1497

#6 #4 OR #5 1504

#7 MeSH descriptor: [Vulnerable Populations] this term only 277

#8 MeSH descriptor: [Poverty] explode all trees 1633

#9 (low NEAR/3 income*):ti,ab,kw OR (poor OR poverty OR vulnerabl*):ti,ab,kw OR ((marginal OR precarious* OR disadvantag* OR "at risk") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)):ti,ab,kw (Word variations have been searched) 77513

#10 #7 OR #8 OR #9 77513

#11 #6 AND #10 415

#12 #3 OR #11 1564

#13 MeSH descriptor: [Trauma and Stressor Related Disorders] this term only 6

#14 MeSH descriptor: [Stress Disorders, Traumatic] explode all trees 2589

#15 (post-traumatic OR posttraumatic OR ptsd OR traumatic disorder*):ti,ab,kw OR ((posttrauma* OR post-trauma*) NEAR/3 (stress* OR disorder* OR psych* OR symptom*)):ti,ab,kw OR (acute stress disorder* OR combat disorder* OR war neuros*):ti,ab,kw OR (trauma-informed OR trauma-focus*):ti,ab,kw OR (trauma* NEAR/3 (care OR treatment* OR therap* OR intervention*)):ti,ab,kw 10583

#16 #13 OR #14 OR #15 10604

#17 #12 AND #16 61

PTSDpubs, formerly known as PILOTS, is a freely available, bibliographic database providing access to the worldwide literature on PTSD and other mental health consequences of traumatic events.

PTSDpubs has unique features that set it apart from other databases. This database offers:

- A custom PTSD and trauma focused thesaurus to help you create a precise search. This unique thesaurus includes specific PTSD symptoms, like hypervigilance, as well as terms such as PTSD (DSM-5) and PTSD (ICD-11) to help you search by diagnostic criteria.
- A detailed listing of tests and measures. Each record in PTSDpubs lists all instruments used within the publication, and you can search for publications that use a specific test or measure.
- A comprehensive range of publication types, including journal articles, books, reports, newsletters, and dissertations.
- Cross-disciplinary coverage of all publications relevant to PTSD and psychological trauma. PTSDpubs does not limit its coverage to selected journals, but tries to include all relevant publications.

Search Strategy

Set#: S1

Searched for: MAINSUBJECT.EXACT("Homeless Persons") OR MAINSUBJECT.EXACT("Homelessness") OR MAINSUBJECT.EXACT("Shelter Residents")

Databases: PTSDpubs

Results: 499

Set#: S12

Searched for: vulnerab* AND hous*

Databases: PTSDpubs

Results: 50

Set#: S13

Searched for: homeless* OR "no housing" OR "no fixed address" OR squatter* OR evict* OR "housing outcome" OR "housing outcomes" OR "no home" OR "no homes"

Databases: PTSDpubs

Results: 466

Set#: S16

Searched for: (hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)

Databases: PTSDpubs

Results: 76

Set#: S17

Searched for: street* NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)

Databases: PTSDpubs

Results: 31

Set#: S19

Searched for: S1 OR S12 OR S13 OR S16 OR S17

Databases: PTSDpubs

These databases are searched for part of your query.

Results: 719

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

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Interventions to treat Post Traumatic Stress Disorder (PTSD) in vulnerably housed populations and trauma-informed care: A scoping review

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Title: Interventions to treat Post Traumatic Stress Disorder (PTSD) in vulnerably housed populations and trauma-informed care: A scoping review

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Abstract

Objectives The goals of this study are to identify and analyse interventions that aim to treat Post Traumatic Stress Disorder (PTSD) and complex PTSD in people who are vulnerably housed and to describe how these treatments have been delivered using trauma-informed care.

Design Scoping review

Search strategy We searched electronic databases including MEDLINE, Embase, PsycINFO, CINAHL, the Cochrane Library, Web of Science, and PTSDpubs for published literature up to November 2021 for any studies that examined the treatment of PTSD in adults who were vulnerably housed. Websites of relevant organizations and other grey literature sources were searched to supplement the electronic database search. The characteristics and effect of the interventions were analyzed. We also explored how the interventions were delivered and the elements of trauma-informed care that were described.

Results 28 studies were included. We identified four types of interventions: (1) trauma focused psychotherapies; (2) non-trauma psychotherapies; (3) housing interventions; and (4) pharmacotherapies. The trauma-informed interventions were small case series and the non-trauma focused therapies included four randomized controlled trials, were generally ineffective. Of the ten studies which described trauma-informed care the most commonly named elements were physical and emotional safety, the experience of feeling heard and understood, and flexibility of choice. The literature also commented on the difficulty of providing care to this population including lack of private space to deliver therapy; the co-occurrence of substance use; and barriers to follow-up including limited length of stay in different shelters and high staff turnover.

Conclusions This scoping review identified a lack of high-quality trials to address PTSD in people who are vulnerably housed. There is a need to conduct well designed trials that take into account the unique setting of this population and which describe those elements of trauma-informed care that are most important and necessary.

Protocol registration: Open Science Framework: https://osf.io/mpjgn

Keywords: trauma-informed care, post traumatic stress disorder, homelessness

Strengths and limitations of this study

- First review of how trauma-informed care is being operationalized in the treatment of PTSD for people who are vulnerably housed.
- Largely homogenous populations (primarily women and US Veterans) included in studies, may not be representative of broader population.
- Often no mention of ethnic or cultural factors to consider when providing treatment.
- Many of the studies available were of low methodological quality.

Background

People who are vulnerably housed have higher mortality and morbidity rates compared to the general population.[1,2] A common vulnerability factor for many disorders is the experience of trauma. It is estimated that as many as 91% of people who are homeless have experienced at least one traumatic event[3] and up to 99% have experienced childhood trauma.[4,5] A recent qualitative study examining

the pathways of men who become homeless long-term in Ontario, found that all of them had experienced complex childhood traumas.[6]

One consequence of exposure to trauma is either Post Traumatic Stress Disorder (PTSD) or complex PTSD (cPTSD). PTSD results in re-experiencing the event, avoidance of reminders of the event, and persistent hypervigilance and awareness of threat. cPTSD results from prolonged threatening events which the individual cannot escape from (such as childhood abuse) and, in addition to PTSD symptoms, results in problems with affect regulation, negative beliefs about oneself, and difficulty in sustaining relationships.[7] Diagnosed PTSD rates in individuals who are homeless are significantly higher than the Canadian population, ranging between 21% and 53%[8–11] which may still be an underestimate of the actual prevalence.

Accessing health care poses a unique and difficult challenge in people who are vulnerably housed, and a history of trauma, often perpetrated by people in caring roles such as parents or other family, makes accepting and engaging in treatment difficult.[6,12] Being vulnerably housed also exposes people to further traumas and re-victimization, such as further physical or sexual assault and an inability to meet basic needs such as food, safety and personal hygiene. [5,13,14] Further, PTSD is often poorly recognized as many people who are vulnerably housed living with PTSD self-medicate with alcohol or other substances. There are also difficulties with accessing appropriate health care because of poverty and organizational barriers within health care providers.[15] These issues result in an underserved population with complex health needs that traditional mental health care is poorly equipped to serve.[10,16,17] Therefore, providing health care services to the vulnerably housed requires a degree of flexibility in terms of how services are provided, who provides them, when, and where. One approach recommended in clinical guidelines is trauma-informed care.[18–20]

The Substance Abuse and Mental Health Services Administration (SAMHSA) has defined trauma-informed care as a program, organization, or system that realizes the widespread impact of trauma and understands potential paths for healing; recognizes the signs and symptoms of trauma in staff, clients, and others involved with the system; and responds by fully integrating knowledge about trauma into policies, procedures, practices, and settings.[21] In 2010, Hopper described the four core principles of trauma-informed care in homeless services as trauma awareness, safety, choice and empowerment and a strengths based approach. The National Centre on Family Homelessness outlined several reasons why programs need to be trauma-informed,[22] including that trauma can impact how people access services, including viewing people and services as unsafe; recognition that people adapt to trauma to keep themselves safe including abusing substances, becoming aggressive, or withdrawing; and, programs and services cannot be “one size fits all”.

None of the five major Clinical Practice Guidelines for the treatment of PTSD[23] address the treatment of people who are homeless apart from the National Institute for Health and Care Excellence (NICE) guidance which states, “that methods of access to services take into account the needs of specific populations of people with PTSD, ...including people who are homeless”. It doesn’t describe what these methods of access may be. A recent clinical practice guideline for individuals who are homeless and vulnerably housed does not include treatment for PTSD although it does recommend trauma-informed care without defining what this is.[20]

People who are vulnerably housed are unique amongst those who have PTSD because of the very high rates of exposure to trauma; the frequent use of substances to self-medicate symptoms; high rates of

physical and mental comorbidities; the difficulty of forming caring relationships; and the difficulty of engaging with traditional health services often due to poverty and systemic barriers. We conducted this scoping review to explore the literature on what treatments have been used in this population and how trauma-informed care has been used to deliver these treatments.

Objectives and rationale

This scoping review aims to provide an overview of the literature on the treatment of PTSD and cPTSD in people who are vulnerably housed, how these treatments have been delivered and, if trauma-informed care was used, how that was operationalized.

The specific research questions guiding this scoping review are:

1. What interventions are described in the literature for the treatment of PTSD and cPTSD in individuals who are vulnerably housed?
2. Are there any interventions for treatment of PTSD and cPTSD in the vulnerably housed which are described as trauma-informed, and how is this operationalized?

Methods

We conducted a scoping review following the methodological framework proposed by Arksey and O'Malley [24] in addition to the methods manual published by the Joanna Briggs Institute's Methodology for Scoping Reviews.[25] Our review also complies with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.[26] The protocol is registered with the Open Science Framework (https://osf.io/mpjgn).[27]

Information sources and literature search

A health librarian (AH) conducted electronic database searches in MEDLINE, Embase, PsycINFO (via Ovid), CINAHL (via EBSCO), The Cochrane Library (via Wiley), Web of Science and PTSDpubs (via Proquest) from inception until March 2020, and updated in November 2021. The search was peer reviewed following the Peer Review of Electronic Search Strategies (PRESS) guidelines.[28] The full search strategy is available in an additional file (Appendix 1). No limits to language or publication date were applied. A thorough targeted search of the grey literature was conducted to identify any non-indexed studies including unpublished trial data, dissertations, theses, and conference proceedings. The Canadian Agency for Drugs and Technologies in Health (CADTH) Grey Matters Checklist was used to structure our grey literature search as well as identify key websites (i.e., organizations that focus on homelessness). We also hand-searched the reference list of identified reports for additional relevant studies that were not captured in the initial search.

Study selection: inclusion criteria

We included published and unpublished primary research studies reporting any quantitative, qualitative, mixed- or multi-methods research which includes comparative and non-comparative methods evaluating an intervention that looks to treat PTSD in adults (18 years of age or older) who are vulnerably housed. For the purposes of this review, vulnerably housed populations are defined as those who are unsheltered, emergency sheltered, provisionally accommodated, and/or at risk of homelessness.[29] Study designs include randomized controlled trials (RCTs), cluster RCTs, quasi-experimental studies, cohort studies, cross-sectional/survey studies, case studies and controlled before and after studies. We excluded reviews, commentaries, and editorials.

Study selection: Screening process

The citations from our comprehensive search strategy were uploaded into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia. Available at www.covidence.org). The screening process included phase I (titles and abstracts) and phase II (full texts) to identify relevant studies. In both phases, titles were screened by two independent reviewers (AB, KC, MK) following the eligibility criteria previously outlined. Prior to each stage of screening, all reviewers ran pilot screening on a random sample of 25 titles and abstracts and 10 full-text studies to identify and address any inconsistencies in applying the inclusion and exclusion criteria. Disagreements between reviewers were resolved by discussion and consultation of a third party (SH) if a consensus could not be reached.

Data abstraction and charting

All included full-text studies were reviewed and abstracted by a single reviewer (AB) using a pilot-tested data abstraction form in Excel. Data that was abstracted included study characteristics, study design, population characteristics, details about the intervention and the trauma-informed approach, and any key findings. A secondary reviewer (KC, MK) verified the abstracted data and any discrepancies between reviewers were resolved through discussion.

The charting process included organizing and interpreting data by sifting, categorizing, and sorting material according to key issues and themes.[24] We charted the data based on intervention type (e.g., trauma focused psychotherapies, non-trauma psychotherapies, housing interventions, and pharmacotherapy).

We assessed evidence level by the approach outlined by Burns, Rohrich and Chung (2012) in The Levels of Evidence and their role in Evidence-Based Medicine (see Burns et al. 2012, p.10, Table 4 for Levels of Evidence for Therapeutic Studies).[30] We decided if the treatment was delivered by a trauma-informed approach by examining the components as outlined by Hooper et al (2010).[18] Studies were marked as “Yes” if they explicitly stated using a trauma-informed approach, while those that used components of a trauma-informed approach, but did not explicitly state a trauma-informed approach were marked as "partial."

Patient Involvement

Persons with lived experience were included in the design stage of this project, but were not directly involved with the scoping review.

Results

The electronic search resulted in a total of 2,564 citations. We identified 1 study in our grey literature search. After de-duplication, 2,522 unique titles and abstracts were screened at phase I, of which 2,367 records were excluded, and 154full-text articles were moved to phase II screening. A total of 28 articles met our inclusion criteria. The details of our selection process are illustrated in our PRISMA flow-chart in Figure 1.

Most studies were conducted in the USA, apart from three studies which were from Canada, Spain, and the Netherlands published between the years 1999 and 2020. We identified 7 randomized-controlled trials (RCT), 1 quasi-RCT, 10 pre-post observational studies, 1 retrospective chart review, 4 case studies, 4 pilot trials, and 1 qualitative and quantitative analysis of trial participant focus groups. A description of included studies is provided in Table 1.

Table 1 Summary of study characteristics

Author (year)	Country	Study design	Sample size	Mean age (SD)	Population	PTSD measurement	Intervention	Intervention length and dose	Was it a trauma-informed approach?	Evidence level
Abramovich et al. (2020)	Canada	Case study	1	23	Trans-woman, recent refugee claimant residing in emergency shelter	Physician made a diagnosis	Pharmacological, psychotherapy	Weekly psychotherapy, daily mirtazapine and prazosin taken at bedtime	Partial, the care team integrated a social determinants of health–based approach into her treatment plan	4
Bani-Fatemi et al., (2020)	Canada	Pre-post observational study	70	21.47 (3.79)	Homeless female youth (16-24 years old); Gender-based violence	UCLA-PTSD Reaction Index – DSM V.	Psychoeducation program	Weekly trauma-informed psychoeducation groups over 16 weeks	Yes	2B
Blitz (2006)	USA	Pre-post observational study [Dissertation]	23	28.3	Black and Latina Women; residing in domestic violence shelter in a large urban centre (NYC)	Self-report using the Davidson Trauma Scale	Psychoeducation, individual therapy sessions, psychiatric consultation, case management meetings	Length of shelter stay (study measured up to 90 days)	Partial, used SELF model	4
Brewer (2019)	USA	Pre-post observational study	48	37.5	Parents residing in a shelter (Men (25%), Women (75%)), primarily Hispanic/Latinx (62.5%).	Provisional diagnosis for PTSD, as self-reported by the PCL-5 questionnaire. Participants were considered to qualify for a provisional diagnosis of PTSD if they had a total score exceeding 33 points	Psychoeducation, process oriented, and experiential exercises	9-week intervention. Each group met once per week and each meeting lasted approximately one and a half hours.	Yes	2B
Burns et al. (2010)	USA	RCT	206	40.1 (7.1)	Individuals receiving care at community-based clinic, experiencing homelessness, cocaine dependence,	Structured Clinical Interview for the DSM-IV (SCID) (clinician) and Posttraumatic Diagnostic Scale (self-report)	Contingency management for cocaine dependence (behavioural treatment for substance use disorders)	Counselling as needed and weekly goal setting in CM+	No	2B

					primarily Men (72.3%)					
Carpenter (1999)	USA	Quasi-RCT [Dissertation]	10	35	Battered Women residing in a shelter	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient with the Impact of Events Scale	Eye Movement Desensitization and Reprocessing	Following an initial two-hour session, subjects received up to seven one-hour sessions on a twice a week basis	No	1B
de Vicente et al. (2004)	Spain	Single arm pilot study	8	47.8 (6.9)	Adults accessing a day centre for homeless in a large urban centre, enrolled; Women (50%)	Two participants were diagnosed with PTSD by using the Composite International Diagnostic Interview, PTSD was diagnosed using "Section K" of the Composite International Diagnostic Interview (CIDI) 2.1	Written and verbal emotional disclosure	Four 1-hour sessions over 2 weeks	No	2B
Desai et al. (2008)	USA	Pre-post observational study	643	43.3 (8.1)	Female veterans who were homeless or at high risk of becoming homeless; Not receiving VA services >6 weeks	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient using PTSD Checklist scores	Cognitive behavioural therapy	The Phase I intervention lasted if women remained residents of the shelter. The Phase II intervention lasted for six months. After the baseline interview, follow-up interviews were obtained every three months over the course of one year	Partial, used Seeking Safety model	4
Feingold et al. (2018)	USA	Retrospective chart review	81	39.3 (10.98)	Men (53%), Women (48%), Other (1%) who were identified in St. Louis Jail Diversion Program records	Trauma exposure and posttraumatic distress were evaluated by a clinical interview conducted by trauma therapists and supplemented by patient self report measures using the Diagnostic and Statistical Manual for Mental Disorders Fourth Edition (DSM–IV) and PTSD diagnostic Criterion A event	Cognitive processing therapy, cognitive behavioural therapy, motivational interviewing	Cognitive Processing Therapy was provided in 12 sessions, Cognitive Behavioural Therapy was provided in 8 sessions, Motivational Interviewing is brief in 3-5 sessions	Yes	2B
Garland et al. (2016)	USA	RCT	180	MORE: 37.7 (10.4)	Men with concurrent disorders in a	Diagnostic interviews were conducted by a psychiatrist and/or clinical social worker	Cognitive-behavioural therapy	10 session group interventions at 2 hours each	No	1B

				CBT: 36.5 (11.2) TAU: 38.7 (9.8)	modified therapeutic community program.	with training in making addiction and psychiatric disorder diagnoses Semi structured psychiatric interview similar to the Mini-International Neuropsychiatric Interview (MINI) and the PCL-C				
Gorzynski (2018)	USA	Pre-post observational study [Dissertation]	63	30.7 (7.6)	Women who were homeless but residing in a non-profit inpatient substance use rehab centre.	Self-report, participants were administered the Trauma Symptom Inventory -2 (TSI-2) during the first treatment session	Cognitive-behavioural	8 sessions for 2 hours each over 4 weeks (1 month, with 2 sessions per week)	Partial, used Seeking Safety model	3B
Harpaz-Rotem et al. (2011)	USA	Pre-post observational study	451	No RT: 43.5 (8.9) RT: 43.9 (6.7)	Female veterans who were homeless or at high risk of becoming homeless; Not receiving VA services >6 weeks	Self-report using the Post Traumatic Stress Disorder (PTSD) Symptom Checklist (PCL) was used to assess PTSD symptoms	Residential treatment	Minimum of 30 days residence in the program	No	3B
Harris et al. (2019)	USA	Pre-post observational study	421	54 (7.52)	Men (71%), Women (28.5%), and Other (0.5%) who were homeless and moved into Permanent Supportive Housing in a large urban centre (LA)	Self-report using the 4-item Primary Care PTSD Screen	Supportive Housing	Not reported	No	3B
Held et al. (2015)	USA	Pilot study	47	51.3 (8.4)	Male veterans who were homeless and living in transitional housing	Self-report, PTSD Checklist–Specific Stressor Version at baseline	Self-compassion therapy	4 weeks	No	2B

Helfrich et al. (2011)	USA	Pre-post observational study	72	46.5	Men (55.6%) and Women (44.4%) living in either emergency housing or single room occupancy program.	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the IES-R (Impact of Event Scale Revised)	Life skills intervention	Not reported	No	2B
Johnson et al. (2006)	USA	Pilot study	18	32 (7)	Women residing in one of 2 eligible shelters and experience of domestic abuse in the month prior	One-week-symptom severity and PTSD diagnostic criteria was assessed by shelter staff using the Clinician Administered PTSD Scale and the Beck Depression Inventory at first presentation	Cognitive behavioural therapy	Twice per week	Partial, used HOPE model	3B
Johnson et al. (2009)	USA	Case study	1	29	Woman with experience of IPV residing in a shelter	The patient first presented with significant IPV-related PTSD symptoms and no Axis I (American Psychiatric Association, 1994) comorbidity	Cognitive behavioural therapy	12 biweekly sessions over 7 weeks	Partial, used HOPE model	4
Johnson et al. (2011)	USA	RCT	70	32.55 (8)	Women residing in one of 2 eligible shelters and experience of domestic abuse in the month prior	Shelter staff used the Clinician Administered PTSD Scale (CAPS) at first presentation	Cognitive behavioural therapy	12 sessions, twice weekly that lasted approximately an 1-1.5 hours	Partial, used HOPE model	1B
Johnson et al. (2016)	USA	RCT	60	HOPE + SSS: 33.30 (10.48) SSS: 33.20 (10.39)	Women residing in one of 4 eligible shelters; and experience of IPV in past month	All assessments were conducted by trained and blinded doctoral students in psychology Clinician-Administered PTSD Scale (CAPS)	HOPE, a CBT and empowerment-based individual treatment	Participant received 10 sessions in shelter over 10 weeks and then up to 6 sessions post shelter for 3 months for a total of 16 sessions throughout the treatment period	Partial, used HOPE model	1B
Johnson et al., (2020)	USA	RCT	172	35.13 (9.12)	Women residing in an eligible shelter;	Clinician-Administered PTSD Scale	HOPE, a CBT and empowerment-	16-session intervention during shelter and first 3-months post-shelter	Partial, used HOPE model	1B

					and experience of IPV in past month		based individual treatment			
Kip et al. (2016)	USA	Pre-post observational study	117	43 (13.2)	Veterans who had been deployed to a major conflict zone, were homeless; primarily Men (92.1%)	A clinical interview and screening that included use of the 17-item Military PTSD Checklist (PCL-M) and PTSD subscale of the 125- item Psychiatric Diagnostic Screening Questionnaire (PDSQ)	Accelerated Resolution Therapy	1-hour session per week for one month	No	2B
Lako et al. (2018)	Netherlands	RCT	136	CTI: 34.24 (8.52) TAU: 33.58 (8.08)	Women residing at a participating shelter ≥6 weeks with an experience of IPV or honor-related violence	Not diagnosed, PTSD symptomology was measured pre-treatment and post-treatment in each patient with the Impact of Events Scale	Critical time intervention (CTI)	The duration of each phase was predetermined at 3 months (thus 9 months total for CTI).	No	1B
Lester et al. (2007)	USA	RCT	206	CM+: 40.54 (7.35) CM: 40.02 (7.01)	Individuals receiving care at community-based clinic, experiencing homelessness or at imminent risk of homelessness, and cocaine use disorders; primarily male (CM+: 74% male; CM: 75% male)	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the SCID and PDS	Behavioral day treatment, abstinence contingent housing, and abstinence-contingent vocational training	Phase I (months 1–2), Phase II (months 3–6), Phase III (months 7–12), and Phase IV (months 13–18)	No	1B
Liu-Barbaro et al. (2015)	USA	Case study	1	63	Man residing at shelter for 5 months	The patient met DSM-IV criteria for PTSD and major depressive disorder	Pharmacological	He was started on treatment with sertraline 50 mg, which was titrated to 150 mg over 1 month, and prazosin 1 mg titrated to 4 mg over 2.5 months.	No	4

Morrison et al. (2007)	USA	Case study	1	49	Woman residing in shelter	Not reported	Supportive and pharmacological therapy	Not reported	No	3B
Schueller et al. (2019)	USA	Pilot study	35	19.06 (0.85)	Young adults, aged 18-24, (Men (31%), Women (65%), Transgender (3%)) who were homeless and spent at least 4 of the previous 7 nights in a shelter.	Current symptoms of PTSD were assessed using the 20-item PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-5 (PCL-5) at baseline and 1 month post intervention	Mobile phone-based therapy (in line with cognitive behavioural therapy principles)	Three 30-min phone sessions over 1 month	No	3B
Van Voorhees et al. (2019)	USA	Qualitative and quantitative study of focus groups	22	55.2	Convenience sample of Veterans (sample 100% Men) who were homeless and receiving VA Primary Care services	PTSD was self-reported using a modified version of the Basic Shelter Inventory	Peer mentors	Four focus groups of 5-8 participants over 90 minutes. Participants had taken part in one of two RCT's of peer mentoring to deliver primary care.	No	3B
Wong (2019)	USA	Pre-post observational study	5	Unclear	Men residing for at least 90 days in a men's shelter for people who use substances working towards sobriety	PTSD symptomology was measured pre-treatment and post-treatment in each patient with the SPRINT scale	Flash Technique	Treatment consisted of eight 50-minute sessions, 1 session per week (thus lasting 8 weeks total)	Yes	2B

Research question 1: What interventions are described in the literature for the treatment of PTSD and cPTSD in individuals who are vulnerably housed?

Trauma focused psychotherapies

We identified four studies that used an intervention where participants were asked to recall details of the traumatic events. One non-randomized study evaluated the effectiveness of using eye movement desensitization and reprocessing (EMDR) in 10 women living in a battered women's shelter in Michigan.[31] Both the five women who received EMDR and the five women who received only the standard shelter program experienced significant reductions in PTSD symptoms although the reduction was greater in the EMDR group. One case series of five men attending a trauma group in a Californian Homeless Shelter study used the Flash Technique [32] which is part of the preparatory phase of EMDR treatment. Another observational study evaluated the feasibility of using accelerated resolution therapy [33] in a cohort of 23 homeless veterans compared to 94 community living veterans in Tampa, Florida. Accelerated resolution therapy involves brief recall of traumatic events, imagery rescripting and some elements of EMDR. About half of individuals who were in the homeless group completed treatment compared to 80% of community veterans. The reasons for non-completion in people who were homeless were moving away from the shelter, conflict with work, and other life circumstances. The authors comment that therapies for individuals who are homeless need to be brief and need to take into account a range of comorbidities and significant life challenges. They also commented on the difficulties of finding a private quiet setting which isn't always available in a homeless shelter. De Vicente et al[34] described a case series of 8 people who were homeless, two of whom were diagnosed with PTSD, attending a day centre in Madrid, Spain for people who are homeless. They received an emotional disclosure protocol where participants were asked to write or speak about their thoughts and feelings associated with their trauma.

Non-trauma focused psychotherapies

Johnson et al. evaluated a cognitive-behavioral therapy (CBT) and empowerment-based individual treatment called Health to Overcome PTSD through Empowerment (HOPE). They reported a case study, pilot study, and two RCTs in women with PTSD or subthreshold PTSD from "battered women's shelters" comparing HOPE with "standard shelter treatment".[35–38] The HOPE therapy focused on addressing PTSD resulting from intimate partner violence (IPV), while using many traditional components of CBT for PTSD (for example cognitive-restructuring, skill building) with a focus on stabilization, safety and empowerment. In the first RCT of 70 people, they found no difference in PTSD outcomes with one in four participants attending all 12 HOPE sessions and about two-thirds attending five or more sessions. Participants were excluded if they were experiencing symptoms of psychosis, suicidal thoughts, had been diagnosed with bipolar disorder or had any change in psychotropic medication in the previous month. In the second RCT of 60 women in shelters, the treatment was continued after the women had left the shelter but again did not find a significant difference in PTSD outcomes. Johnson et al. also conducted a third RCT, an expansion of prior RCTs, comparing the HOPE intervention to an adapted version of present-centered therapy (PCT+). They evaluated the efficacy relative to a time- and attention-matched control condition over a 12-month period. Results of multivariate models found that both HOPE and PCT+ were associated with significant and large reductions in IPV related PTSD symptoms. Further, both treatments resulted in significant small to medium effects on IPV, depression, empowerment, posttraumatic cognitions, and health-related quality of life. The study authors found

that both HOPE and PCT+ are viable and efficacious treatments of IPV–related PTSD in women residing in shelters[39].

Two observational studies aimed to evaluate the effectiveness of a CBT based group therapy, Seeking Safety, in women who were homeless..[40,41] Seeking Safety is a manualized CBT intervention consisting of 25 individual modules that address issues of safe behaviors and relationships, life skills, and relapse prevention. In the 2008 observational cohort study, 91 female US veterans who were vulnerably housed were offered Seeking Safety and were compared to a historical cohort of 359 women who did not receive Seeking Safety. It is unclear how many of the women had PTSD but there was a significant decrease in PTSD symptoms over the whole group although the differences were small. The Seeking Safety group significantly increased their drug use. In the 2017 pretest post-test interventional study, 63 women who were homeless in an in-patient residential setting who had been exposed to trauma and had substance use disorders were offered an abbreviated version of Seeking Safety. The abbreviated version was developed in response to criticism that the full version was too long, required high levels of participant commitment, and was unsuitable for "transient" populations. The authors found that after eight two-hour sessions over four weeks there was a significant improvement in perceived self-efficacy in the two-thirds of the sample who completed a minimum of six out of eight sessions. The Veterans Affairs Clinical Practice Guidelines concludes that there is insufficient evidence to recommend for or against Seeking Safety for treatment of PTSD in the general population.

Feingold [42] reported an observational cohort study of cognitive processing therapy, CBT and motivational interviewing in adults within a US jail diversion program. About a third of their population of 81 participants were vulnerably housed and 62% were diagnosed with PTSD. The main finding was that about half of the sample did not complete their treatment. Increased completion rates were associated with emergency therapy sessions and the authors comment on the need for flexibility in delivering care to this population. In those who did complete their treatment there was a significant decrease in PTSD symptoms.

Schueller [43] reported a single group pilot study evaluating the feasibility and acceptability of a mobile phone-based therapy that used an app designed to help provide coping skills to 35 young adults (18-24 years) recruited from homeless shelters in Chicago. Participants received a mobile phone, a data plan, the app and one month of support from a coach consisting of up to three brief sessions. Just over half of the participants completed all three coaching sessions but there were no significant changes in clinical outcomes.

Contingency management

In one unblinded RCT, 187 people who were homeless from Alabama, dependent on cocaine, were randomized to contingency management or contingency management plus. At the start of the study 21 participants had a diagnosis of PTSD. Housing was dependent on negative urine screens for cocaine. There did not appear to be any difference in outcomes between the two groups.[44,45]

Educational interventions

One RCT examined the effectiveness of a critical time intervention for abused women who were transitioning from women's shelters to community living.[46] Critical time intervention is a time-limited, strengths-based intervention designed to support vulnerable people during transitions in their lives. This study of 136 Dutch women found a significant decrease in PTSD symptoms after nine months which was mainly due to a reduction in symptoms in non-Dutch speaking women. Another pilot study evaluated

the effect of self-compassion therapy compared to stress inoculation on trauma-related guilt and PTSD severity.[47] The authors randomized 47 US veterans living in transitional housing to receive workbooks on the different therapies. Symptoms of PTSD did not significantly differ between the two groups after treatment. Twenty of the participants did not complete the workbooks. One qualitative study of 22 homeless US veterans hypothesised that feeling disconnected was associated with poor outcomes in those with PTSD.[48] A pretest and post-test study of 8 adults looked to evaluate the treatment effects of Building Bridges, a group-based psychotherapy adapted for parents living in homeless shelters in San Francisco.[49] Building Bridges consisted of nine 90 minute groups that included psychoeducation, mindfulness and experiential exercises. There was no significant impact on PTSD symptoms. The authors comment on the difficulty of providing groups in a shelter setting because of staff turnover and restrictions, such as length of stay, at different sites. Another pretest post-test study examined the impact of a life skills group and individual program on 72 individuals who had been recently homeless living in emergency housing.[50] Eight out of ten participants reported a history of abuse. Symptoms of PTSD significantly decreased after the intervention. The life skills intervention consisted of one or more modules which focused on food management, money management, room and self-care management and safe community participation. A longitudinal observational study evaluated the changes in quality of life (primary outcome), psychological distress, traumatic symptoms, substance use, resilience, victimization, and sense of mastery (secondary outcomes) in young women experiencing gender-based violence and homelessness in Toronto, Canada after their enrollment in the Peer Education and Connection through Empowerment (PEACE) program. The PEACE program is a community-based, trauma-informed, group psychoeducation intervention launched in 2017, for female identified youth aged 16 to 24 experiencing gender-based violence and homelessness. The program aims to empower and support survivors of gender-based violence, offering weekly trauma-informed psychoeducation groups over 16 weeks to promote health and well-being. Overall, the study found that after 12 months, quality of life increased significantly among participants ($p = 0.009$), and the 12-month victimization score was significantly decreased relative to baseline ($p = 0.05$). Changes in other outcomes were not statistically significant. The study authors concluded that a brief, community-based, trauma-informed, group psychoeducation intervention may be helpful in improving the quality of life and reducing experiences of victimization among female identified youth[51].

Housing interventions

We identified three studies that used housing and shelter as a way to provide therapy.[52–54] One study used a shelter as a restorative milieu that integrated trauma recovery and social justice empowerment for Black and Latino women in New York.[52] This pretest post-test descriptive and qualitative study of about 20 women found a reduction in PTSD symptoms over time and an appreciation by the residents that the shelter milieu felt safe and nurturing. Another study focused on providing supportive housing to 421 adults who were homeless in Los Angeles.[54] This descriptive pretest post-test study found that about half the sample had probable PTSD at baseline which reduced to 40% at three, six and 12 months. A cohort study of US female veterans who were homeless compared 234 who received at least 30 days of residential treatment with 217 who received less than 30 days. The study was able to follow up about half the participants after one year. The authors found a small but significant improvement in PTSD symptoms in those who received residential treatment.[53]

Pharmacotherapy

There were three single person case studies describing successful pharmacological treatments.[55–57] In one study, a 23-year-old transgender refugee woman in an emergency shelter in Canada was prescribed mirtazapine 60mg for PTSD and insomnia, and prazosin 6mg for nightmares.[55] Liu-Barbaro and Stein[56] describe treating a 63-year-old Ethiopian man living in a homeless shelter with major depressive disorder and PTSD with dissociative symptoms. He was treated successfully with sertraline 150mg and prazosin 4mg. The authors note that this patient had suffered for years before being diagnosed and treated.[56] Finally, the last study reported a "composite case" of a 49-year-old woman with PTSD prescribed sertraline 150mg and supportive therapy.[57]

Research question 2: Are there any interventions for treatment of PTSD and cPTSD in the vulnerably housed which are described as trauma-informed, and how is this operationalized?

We identified four studies that explicitly stated using a trauma-informed approach to deliver treatment.[32,42,49,51] Two studies did not clearly describe how they operationalized their trauma-informed approach.[32,42] One study investigating the Building Bridges intervention described using a trauma-informed approach based on the work by Guarino et al.[58] As a result Building Bridges is based on understanding how trauma affects parents' and children's cognitions, emotions and behaviors. The authors stressed that emotional safety, and the desire to feel heard, protected, comforted, and understood is an important aspect in treating populations who have experienced trauma. Bani-Fatemi et al. conducted a longitudinal observational study of a psychoeducation group intervention, Peer Education and Connection through Empowerment (PEACE), which they described as trauma-informed. The PEACE program is peer led and community-based and was designed using a participatory action framework to return power to those in the program and a focus on participant safety in the group[51].

There were 7 studies that did not explicitly state using a trauma-informed approach; however they did describe components of their treatment that align with the concepts of a trauma-informed care.[35–38,40,52,55,59] The HOPE intervention focused on the impact of present trauma of interpersonal violence and did not focus on trauma from the past. The research group investigating HOPE used Herman's[60] multistage model of recovery which addresses the treatment needs of battered women and incorporates three stages of recovery: (a) establishing safety, self-care, and protection, (b) remembrance and mourning, and (c) reconnection. The authors also note the importance of flexibility and being available when people are ready to engage.[61] Two studies used Seeking Safety[40,59] which they describe as based on five central ideas: "1) Safety as the priority of this first stage treatment; 2) integrated treatment of PTSD and substance abuse; 3) a focus on ideals; 4) four content areas: cognitive, behavioral, interpersonal, and case management; and 5) attention to therapeutic processes." The goals of the treatment are to create an empathetic approach where the clients "own" the trauma, to provide education, to validate the connection between trauma and substance abuse, and to offer safe coping skills to manage the symptoms, impulses, and emotions that often come with these co-occurring disorders. One case study integrated a social determinants of health based approach into the treatment plan.[55]

Discussion

Despite the high prevalence of PTSD in the vulnerably housed there is little evidence of what is effective treatment. Figure 2 outlines how the 28 studies identified map onto the four components of trauma-informed care. The four trauma-informed interventions were small case series, and the non-trauma focused therapies were generally ineffective with respect to PTSD symptoms, which is consistent with

the broader literature. A novel intervention in this population is using housing as an intervention but the impact on PTSD symptoms was relatively modest and the strength of evidence low. A systematic review of permanent supportive housing for people who were homeless found no impact on psychiatric symptoms although there was greater housing stability compared to usual care.[62]

We found three studies that explicitly stated using a trauma-informed approach, while seven described a method that incorporated all or some components of a trauma-informed care approach. Although guidelines and organizations recognize the need for a trauma-informed approach,[20,21,63,64] it is unclear how this translates into action or what the most important components are. This review highlights the need to operationalize trauma-informed care and to identify the necessary and most important components in the vulnerably housed. Another area that is unexplored is whether what people with lived experience consider to be trauma-informed care is different to what providers would consider. The impact of an intervention that is trauma-informed is most likely to be seen in increased rates of engagement and completion of treatment.

Guidelines on the treatment of PTSD recommend trauma focused therapies as the most effective interventions. This review clearly identifies a research gap in the application of trauma focused therapies in those who are homeless. The strengths of the studies included in this review demonstrate that it is possible to deliver interventions in this population. However, an important limitation is the difficulty of keeping people in treatment with most studies reporting low engagement with treatment or low follow-up rates. Few studies described what proportion of people agreed to participate in the treatments but the small numbers in most studies suggest that engagement in treatment is difficult. Further the literature in this area is primarily focused on women and US Veterans. Many studies did not mention any ethnic or cultural factors to consider when providing treatment for the vulnerably housed. Also there is a lack of qualitative and experiential data to illustrate any other meaningful changes that may have occurred during treatment. Measuring the effects of trauma in this population can also be difficult as functional improvement such as stopping using substances and stability in housing may paradoxically result in individuals experiencing more PTSD symptoms as they no longer self-medicate. There is also the issue of ongoing exposure to trauma, such as assault, whilst the person is homeless. Continuing trauma may result in acute stress reactions which could obscure any improvements in PTSD symptoms. Future studies in this population should also ask about recent trauma. Lastly, many of the studies had low levels of evidence and reporting of studies. Although a formal quality assessment was not performed, the levels of evidence were rated for each study and most studies were found to have lower levels of evidence due to small sample sizes or low rates of follow-up. While these studies have added value to the literature, any conclusions made from these studies should be interpreted with caution.

Conclusion

There is currently little evidence on how trauma-informed care for PTSD in the vulnerably housed should be delivered and whether it is effective. A limited number of small trials make interpretation of acceptability, feasibility and effectiveness difficult. Evaluation of interventions should be expanded to include not only symptom improvement, but experiential data informed by the engagement of patients as partners. Measures of symptom severity alone often do not provide a complete picture of the patient experience, excluding factors that may be important such as increased understanding of their illness, skill building, coping and wellbeing.

This review has also highlighted the need for pragmatic trial designs instead of “one-size fits all” interventions and delivery approaches. The development of a trauma-informed care strategy should be

adaptable to multiple cultural or geographic situations to ensure that healthcare providers are able to deliver meaningful, evidence-based care and no individuals are “left behind”. Any guidance should include recommendations for implementation or adaptation to ensure fidelity for comparison of effectiveness while allowing for flexibility in delivery.

Managing PTSD or complex PTSD and navigating social support systems, including access to effective mental healthcare options, is a significant challenge to people who are vulnerably housed. It can also be challenging for many service providers working with a population where appropriate treatment approaches are poorly understood, under-researched and lack a patient-oriented perspective. It is unclear in this population if treatments for complex PTSD need to be different from PTSD. This scoping review has identified several gaps in providing trauma-informed care to a vulnerable population. There is a need to conduct well-designed trials of trauma focused therapies with mixed-methods approaches, focusing on trauma-informed care principles to improve treatments for the vulnerably housed experiencing or at high risk of developing mental health issues. Research needs to clarify which components of trauma informed care are the most important and how to operationalize these.

The main implications from this review for individuals working with this population are that there is no evidence that contradicts recommendations from existing guidelines that trauma focussed therapies are effective treatments for PTSD. Trauma focused treatments should be accessible to people who are homeless or vulnerably housed. The delivery of effective interventions should focus on trauma informed approaches with an emphasis on safety, choice, awareness of how trauma affects the acceptability of care and a strengths-based approach.

Contributors
This research was conceptualized by SH, while AB and NEE contributed to the study design. Search Strategy and searches were completed by AH. While title, abstract and full screenings, and data extraction were carried out by AB, KC, MK, NEE under guidance from SH. Manuscript was drafted by AB, NEE and SH. Critical review of manuscript was undertaken by all authors. All authors approved the final manuscript.

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64 Services HI. Homeless Intervention Services. 2017.

Figure Legend

Trauma informed care (from Hopper) described in the scoping review (Outer Circle)

Types of intervention found in the scoping review (Middle Circle)

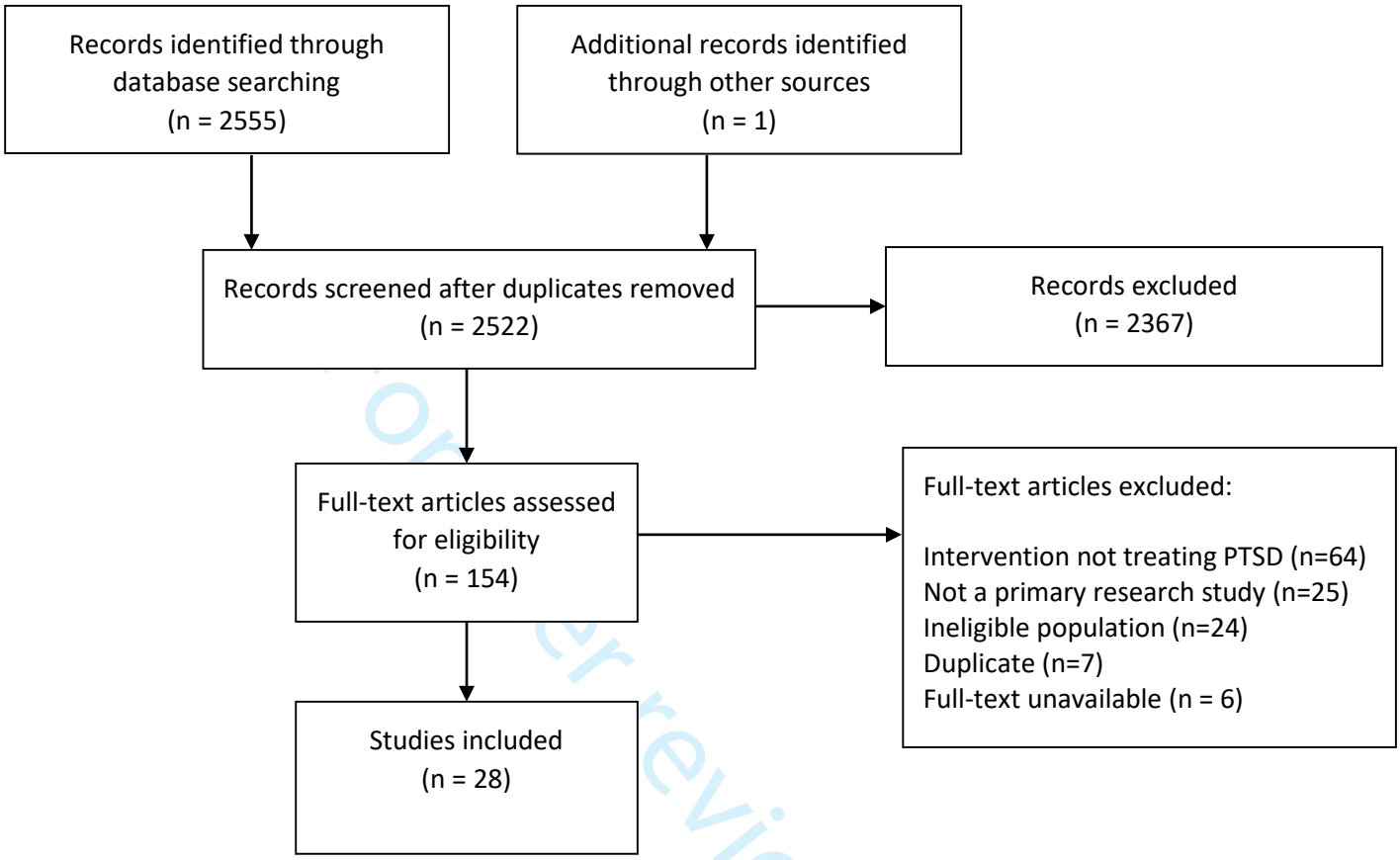

Figure 1 PRISMA flow-chart of included studies

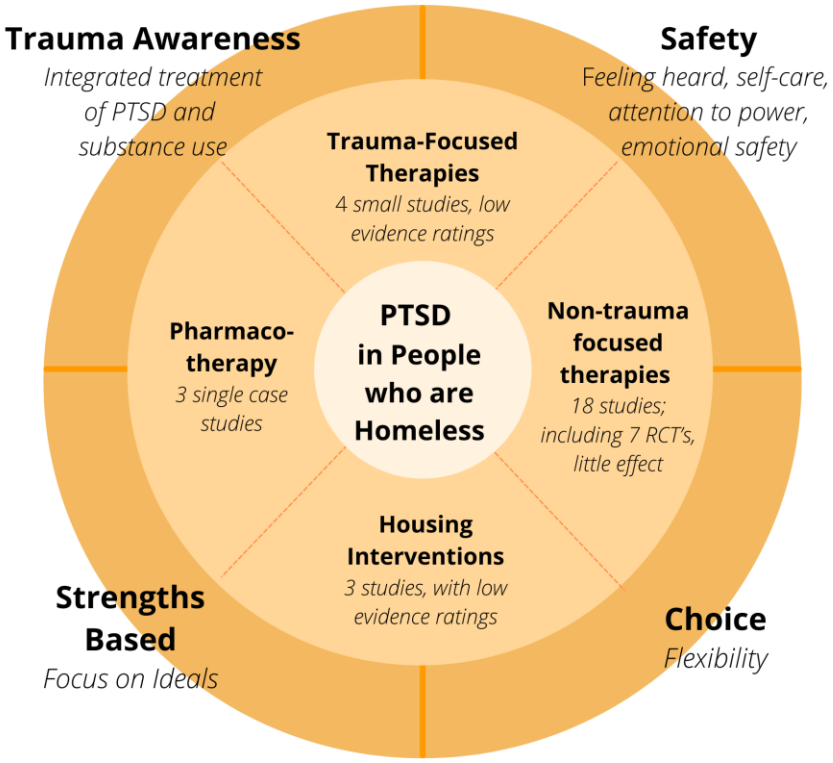

Figure 2. Summary of findings

Appendix 1 - Final literature search strategies

Limits: none

Searches run on March 26, 2020
Search update run on November 1, 2021

Databases:

- Medline (medall)
- Embase (emczd)
- APA PsycInfo (psyh)
- CINAHL
- Cochrane Library (via Wiley platform)
- WebOfScience
- PtsdPubs

Embase, Ovid MEDLINE(R), APA PsycInfo

Search history sorted by search number ascending

#	Searches	Results
1	exp Homeless Persons/	10564
2	homeless*.ti,ab,kf.	33339
3	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kf.	3254
4	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab,kf.	12953
5	housing outcome*.ti,ab,kf.	249
6	(vulnerabl* adj2 hous*).ti,ab,kf.	564
7	(no housing or no fixed address or squatter* or evict*).ti,ab,kf.	3651
8	or/1-7	52487
9	exp housing/	68128
10	housing.ti,ab,kf.	80001
11	or/9-10	117889
12	vulnerable populations/	23575
13	exp poverty/	97990
14	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab,kf.	1851735
15	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kf.	120846
16	or/12-15	2005185

17	and/11,16	17080
18	or/8,17	65715
19	"trauma and stressor related disorders"/	48773
20	exp stress disorders, traumatic/	94387
21	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab,kf.	203057
22	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab,kf.	115064
23	(acute stress disorder* or combat disorder* or war neuros*).ti,ab,kf.	2822
24	(trauma-informed or trauma-focus*).ti,ab,kf.	6927
25	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab,kf.	58728
26	or/19-25	281197
27	and/18,26	1582
28	27 use medall	473
29	exp homeless person/	10564
30	homeless*.ti,ab,kw.	33547
31	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kw.	3262
32	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab,kw.	12990
33	housing outcome*.ti,ab,kw.	249
34	(vulnerabl* adj2 hous*).ti,ab,kw.	578
35	(no housing or no fixed address or squatter* or evict*).ti,ab,kw.	3669
36	or/29-35	52686
37	housing/	49217
38	real estate/	231
39	housing.ti,ab,kw.	80421
40	or/37-39	103700
41	vulnerable population/	26323
42	poverty/	92527
43	exp lowest income group/	27543
44	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab,kw.	1853972
45	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab,kw.	120465
46	or/41-45	2010908
47	and/40,46	16486
48	or/36,47	65390
49	posttraumatic stress disorder/	122887
50	psychotrauma/	9075
51	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab,kw.	204775

52	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab,kw.	116228
53	(acute stress disorder* or combat disorder* or war neuros*).ti,ab,kw.	2936
54	(trauma-informed or trauma-focus*).ti,ab,kw.	6948
55	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab,kw.	59229
56	or/49-55	287064
57	and/48,56	1606
58	57 use emczd	679
59	exp homeless/	7407
60	homeless*.ti,ab.	33202
61	((street* or no home or no homes) adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab.	3245
62	((hous* or home or homes or shelter* or hostel? or accomodation? or dwelling?) adj3 (insecur* or instabil* or stabil* or stable or unstabl* or temporar* or marginal* or precarious* or inadequate*)).ti,ab.	12920
63	housing outcome*.ti,ab.	249
64	(vulnerabl* adj2 hous*).ti,ab.	562
65	(no housing or no fixed address or squatter* or evict*).ti,ab.	3638
66	or/59-65	50449
67	exp housing/	68128
68	exp living arrangements/	68050
69	housing.ti,ab.	79147
70	or/67-69	164338
71	at risk populations/	37373
72	poverty/	92527
73	runaway behavior/	1361
74	lower income level/	8653
75	disadvantaged/	17646
76	((low adj3 (income* or revenu*)) or poor or poverty or vulnerabl*).ti,ab.	1849039
77	((marginal or precarious* or disadvantag* or "at risk") adj3 (people or youth or person? or population? or individual? or m?n or wom?n or adult?)).ti,ab.	120201
78	or/71-77	2029780
79	and/70,78	23725
80	or/66,79	70172
81	"Stress and Trauma Related Disorders"/	13
82	exp Posttraumatic Stress Disorder/	122996
83	Acute Stress Disorder/	2410
84	Post-Traumatic Stress/	54050
85	combat experience/	2864
86	emotional trauma/	24247
87	traumatic neurosis/	334

88	stress reactions/	85294
89	trauma/	480688
90	(post-traumatic or posttraumatic or ptsd or traumatic disorder*).ti,ab.	201831
91	((posttrauma* or post-trauma*) adj3 (stress* or disorder* or psych* or symptom*)).ti,ab.	114265
92	(acute stress disorder* or combat disorder* or war neuros*).ti,ab.	2797
93	or/81-92	788522
94	exp "stress and trauma related disorders"/	33752
95	exp trauma/	3330169
96	or/94-95	3354276
97	exp intervention/	103258
98	and/96-97	4077
99	(trauma-informed or trauma-focus*).ti,ab.	6863
100	(trauma* adj3 (care or treatment* or therap* or intervention*)).ti,ab.	58567
101	or/98-100	64494
102	or/93,101	822408
103	and/80,102	2442
104	103 use psyh	712
105	or/28,58,104	1864
106	remove duplicates from 105	1209

CINAHL

#	Query	Results
S7	S5 AND S6	620
S6	(MH "Stress Disorders, Post-Traumatic+") OR TX (post-traumatic OR posttraumatic OR ptsd OR "traumatic disorder*") OR TX ((posttrauma* OR post-trauma*) N3 (stress* OR disorder* OR psych* OR symptom*)) OR TX ("acute stress disorder*" OR "combat disorder*" OR "war neuros*") OR TX (trauma-informed OR trauma-focus*) OR TX (trauma* N3 (care OR treatment* OR therap* OR intervention*))	57,274
S5	S1 OR S4	20,662
S4	S2 AND S3	5,267

S3	((MH "Poverty") OR (MH "Indigent Persons") OR (MH "Vulnerability")) OR TX (poor OR poverty OR vulnerabl*) OR TX (low N3 (income* or revenu*)) OR TX ((marginal OR precarious* OR disadvantag* OR "at risk") N3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?))	322,387
S2	(MH "Housing+") OR TX housing*	23,749
S1	((MH "Homelessness") OR (MH "Homeless Persons")) OR TX homeless* OR TX ((street* OR "no home" OR "no homes") N3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) OR TX ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) N3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)) OR TX ("housing outcome" OR "housing outcomes" OR "no housing" OR "no fixed address" OR squatter* OR evict*) OR TX vulnerabl* N2 hous*	16,888

Web of Science:

Set	**Results**	**Save History / Create AlertOpen Saved History**
# 7	**655**	#6 AND #5 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 6	**112,391**	**TOPIC:** (post-traumatic OR posttraumatic OR ptsd OR "traumatic disorder*") *OR* **TOPIC:** ((posttrauma* OR post-trauma*) NEAR/3 (stress* OR disorder* OR psych* OR symptom*)) *OR* **TOPIC:** ("acute stress disorder*" OR "combat disorder*" OR "war neuros*") *OR* **TOPIC:** (trauma-informed OR trauma-

		focus*) *OR* **TOPIC:** (trauma* NEAR/3 (care OR treatment* OR therap* OR intervention*)) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 5	**45,160**	#4 OR #1 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 4	**13,545**	#3 AND #2 *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 3	**1,147,594**	**TOPIC:** (poor OR poverty OR vulnerabl*) *OR* **TOPIC:** (low NEAR/3 (income*)) *OR* **TOPIC:** ((marginal OR precarious* OR disadvantag* OR "at risk") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 2	**100,783**	**TOPIC:** (housing*) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*
# 1	**33,943**	**TOPIC:** (homeless* OR "housing outcome" OR "housing outcomes" OR "no housing" OR "no fixed address" OR squatter* OR evict*) *OR* **TOPIC:** ((street* OR "no home" OR "no homes") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)) *OR* **TOPIC:** ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)) *OR* **TOPIC:** (vulnerabl* NEAR/2 hous*) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years*

Cochrane Library (61 references from CENTRAL only) - no results in Cochrane Database of Systematic Reviews, although the entire library was searched.

Search Name:

Date Run: 26/03/2020 18:04:44

Comment:

ID Search Hits

#1 MeSH descriptor: [Homeless Persons] explode all trees 332

#2 (homeless* OR "no housing" OR "no fixed address" OR squatter* OR evict* OR "housing outcome*"):ti,ab,kw OR (vulnerabl* NEAR/2 hous*):ti,ab,kw OR ((street* OR "no home" OR "no homes") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)):ti,ab,kw OR ((hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)):ti,ab,kw (Word variations have been searched) 1258

#3 #1 OR #2 1258

#4 MeSH descriptor: [Housing] explode all trees 393

#5 (housing*):ti,ab,kw 1497

#6 #4 OR #5 1504

#7 MeSH descriptor: [Vulnerable Populations] this term only 277

#8 MeSH descriptor: [Poverty] explode all trees 1633

#9 (low NEAR/3 income*):ti,ab,kw OR (poor OR poverty OR vulnerabl*):ti,ab,kw OR ((marginal OR precarious* OR disadvantag* OR "at risk") NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)):ti,ab,kw (Word variations have been searched) 77513

#10 #7 OR #8 OR #9 77513

#11 #6 AND #10 415

#12 #3 OR #11 1564

#13 MeSH descriptor: [Trauma and Stressor Related Disorders] this term only 6

#14 MeSH descriptor: [Stress Disorders, Traumatic] explode all trees 2589

#15 (post-traumatic OR posttraumatic OR ptsd OR traumatic disorder*):ti,ab,kw OR ((posttrauma* OR post-trauma*) NEAR/3 (stress* OR disorder* OR psych* OR symptom*)):ti,ab,kw OR (acute stress disorder* OR combat disorder* OR war neuros*):ti,ab,kw OR (trauma-informed OR trauma-focus*):ti,ab,kw OR (trauma* NEAR/3 (care OR treatment* OR therap* OR intervention*)):ti,ab,kw 10583

#16 #13 OR #14 OR #15 10604

#17 #12 AND #16 61

PTSDpubs, formerly known as PILOTS, is a freely available, bibliographic database providing access to the worldwide literature on PTSD and other mental health consequences of traumatic events.

PTSDpubs has unique features that set it apart from other databases. This database offers:

- A custom PTSD and trauma focused thesaurus to help you create a precise search. This unique thesaurus includes specific PTSD symptoms, like hypervigilance, as well as terms such as PTSD (DSM-5) and PTSD (ICD-11) to help you search by diagnostic criteria.
- A detailed listing of tests and measures. Each record in PTSDpubs lists all instruments used within the publication, and you can search for publications that use a specific test or measure.
- A comprehensive range of publication types, including journal articles, books, reports, newsletters, and dissertations.
- Cross-disciplinary coverage of all publications relevant to PTSD and psychological trauma. PTSDpubs does not limit its coverage to selected journals, but tries to include all relevant publications.

Search Strategy

Set#: S1

Searched for: MAINSUBJECT.EXACT("Homeless Persons") OR MAINSUBJECT.EXACT("Homelessness") OR MAINSUBJECT.EXACT("Shelter Residents")

Databases: PTSDpubs

Results: 499

Set#: S12

Searched for: vulnerab* AND hous*

Databases: PTSDpubs

Results: 50

Set#: S13

Searched for: homeless* OR "no housing" OR "no fixed address" OR squatter* OR evict* OR "housing outcome" OR "housing outcomes" OR "no home" OR "no homes"

Databases: PTSDpubs

Results: 466

Set#: S16

Searched for: (hous* OR home OR homes OR shelter* OR hostel? OR accomodation? OR dwelling?) NEAR/3 (insecur* OR instabil* OR stabil* OR stable OR unstabl* OR temporar* OR marginal* OR precarious* OR inadequate*)

Databases: PTSDpubs

Results: 76

Set#: S17

Searched for: street* NEAR/3 (people OR youth OR person? OR population? OR individual? OR m?n OR wom?n OR adult?)

Databases: PTSDpubs

Results: 31

Set#: S19

Searched for: S1 OR S12 OR S13 OR S16 OR S17

Databases: PTSDpubs

These databases are searched for part of your query.

Results: 719

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	
Limitations	20	Discuss the limitations of the scoping review process.	
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.